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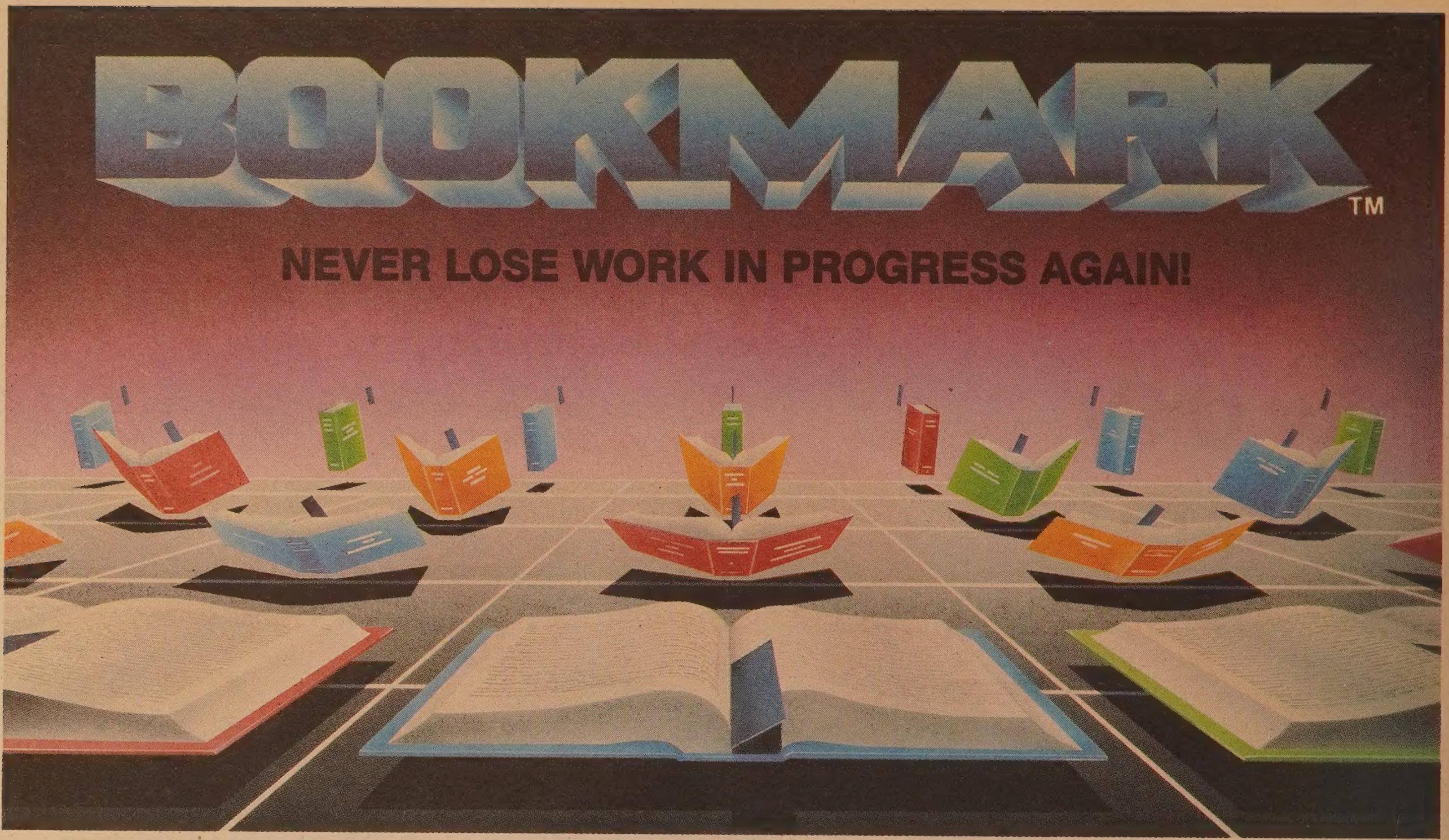
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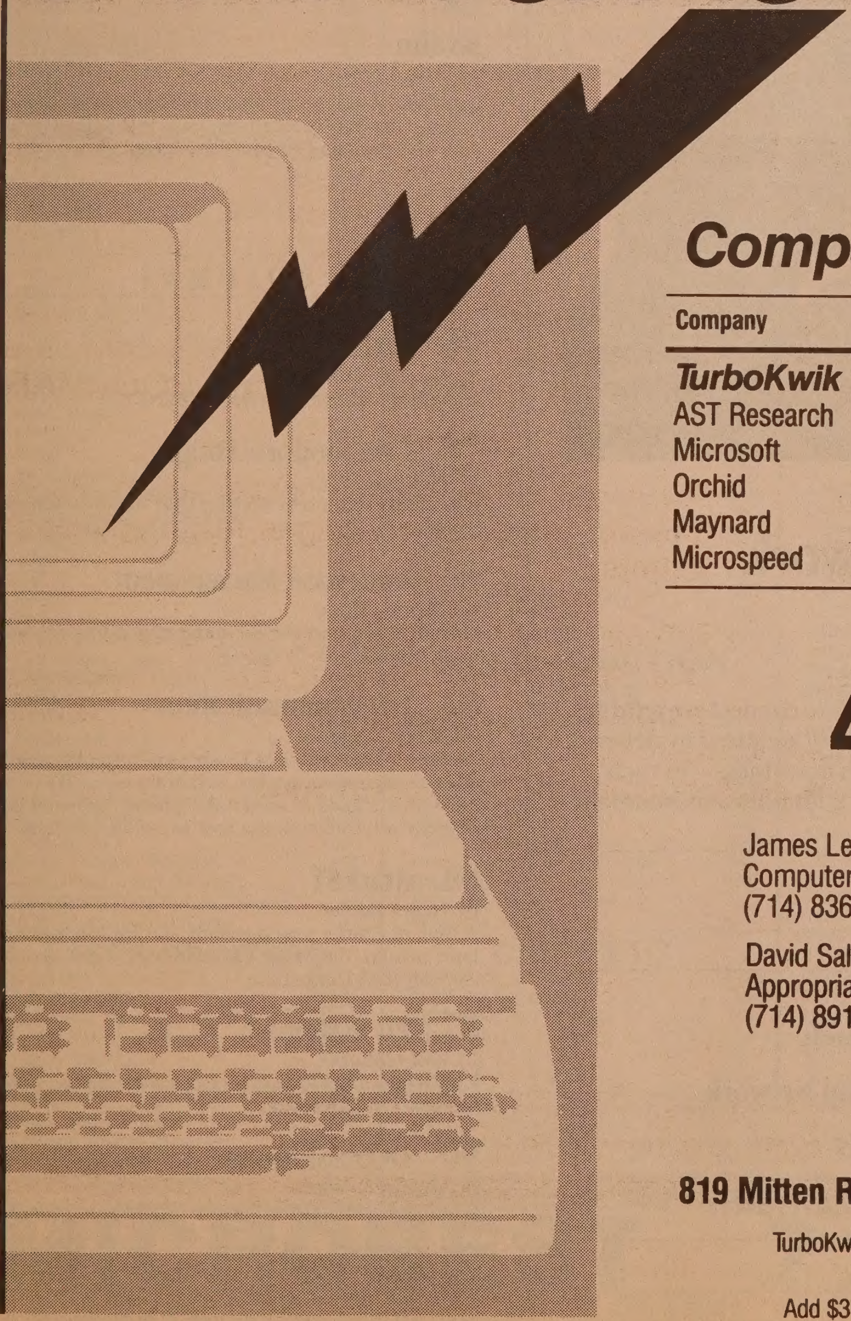

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MICROTIMES

COVER STORY

Cover and contents photos: Pat Johnson

Nat Goldhaber, founder of Centram, knows a thing or two about LANs. See page 50.

50 Centram's TOPS Network It's All Connected

By Mary Eisenhart

According to founder Nat Goldhaber, Centram's modest objective is to connect everything with everything else. So far, this Berkeley-based company (recently acquired by network giant 3Com) has managed to link MS-DOS, UNIX and Macintosh machines — in such a way that each machine's operator works on shared files in a familiar environment.

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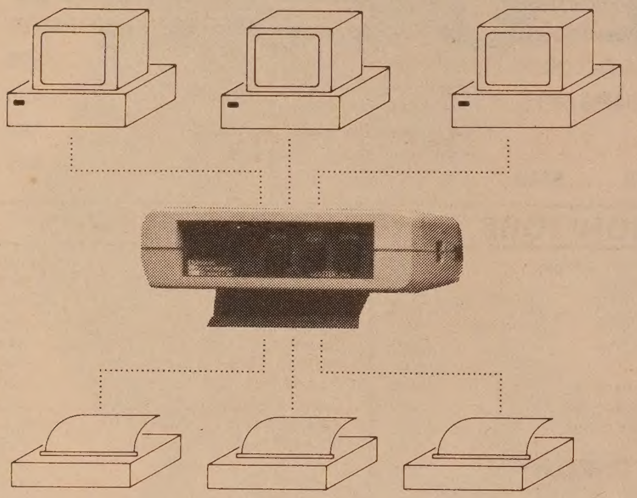

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February 3-6 "Machine Vision and Image Recognition." San Diego. Course sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

February 3-6 "Effective Skills for Technical Managers." Anaheim. Course sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

February 5-7 Advanced Lotus 1-2-3. Los Angeles Airport Hilton. Seminar sponsored by American Management Association. Call Vern Lautner at (212) 903-8208 for information.

February 7 A Publishing Seminar For Software Developers. Dunfey Hotel, San Mateo. Sponsored by the Software Entrepreneurs' Forum and the Software Publishers' Association. Registration required. Call (415) 854-7219 for information.

February 7 Computer Swap. LA County Fairgrounds, Pomona. Call Computer Swap, (800) 252-SWAP for information.

February 18-21 How To Use Your Personal Computer. Sheraton Plaza La Reina, Los Angeles. Seminar sponsored by American Management Association. Call Vern Lautner at (212) 903-8208 for information.

February 20-22 The Commodore Show. Brooks Hall/Civic Center, San Francisco. Call Computer Swap, (800) 252-SWAP for information.

February 23-24 Troubleshooting The IBM PC. San Diego. Course sponsored by Movonics Company. Call Dick Gasparini or Karen Roobler, (415) 960-1250 for information.

February 28 Computer Swap. Orange County Fairgrounds. Call (800) 252-7927 for information.

March 3-6 "Designing Signal Processors with DSP and Bit-Slice Chips." Anaheim. Course sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

March 7 Computer Swap. Fresno fairgrounds. Call (800) 252-7927 for information.

March 10-13 "Introduction to Digital Control." San Diego. Course sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

March 10-13 "Machine Vision and Image Recognition." Anaheim. Course sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

As a community service, MicroTimes lists trade shows, seminars, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month , two months before the cover date of the issue in which you'd like it to appear (i.e. the deadline for the March issue, distributed during February, is January 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.

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BUT JAN LEWIS SAYS . . .

On The Adolescence Of Apple

It must be fun to be Del Yocam. He has survived and prospered through Apple's hypergrowth, the purges and coups to become the No. 2 honcho. Sales are strong and the stock is approaching its former glory.

Del's analogy of Apple's adolescence is most appropriate: Ready to flex its growing muscles and take on new responsibilities, but concerned about losing its youthful creativity and energy. But, as with many adolescents, some actions may seem awkward, but are really signs of strength.

For example, closing and then opening the Mac to third party peripherals may appear awkward, but these decisions have protected Apple's past markets and future territory. And that protection comes from more than just operating systems but includes hardware, software and presentation. As the industry hears more smalltalk about "look and feel," Apple's strategy becomes more apparent.

A little Apple II history illuminates the strategy. When Apple began 10 years ago, it just did not have the money to provide all the pieces that made the II attractive to hundreds of different types of users. The only choice was to open the box and let the third party entrepreneurs bootstrap the market by developing the many products that Apple could not afford to develop.

Five years later, IBM entered the market quickly, cheaply and with the *least risk* by creating an open and cloneable PC. Compaq, Eagle, Corona, Columbia et al. quickly jumped in, while IBM ramped up its own production. The market responded by buying millions of copies of the IBM standard but without IBM. In contrast, Apple protected the II and then the Mac markets by preventing duplication of the operating system and architecture. The Mac, however, was mostly closed to third party hardware.

Now times have changed. IBM needs to close off the PC to secure a greater piece of the pie, while Apple needs to open up the Mac for third parties to supply the products that the business market demands. So IBM and Apple are both moving to the hybrid: An open box with an uncloneable heart. But Apple adds another level—aggressive protection of the Mac "look and feel."

IBM and Apple are both moving to the hybrid: An open box with an uncloneable heart.

This defense protects the soul of Apple's strategy to dominate the PC market: Get 'em while they are young by becoming the standard for education computing. An MBA who grows up with an Apple II, then a IIGS, then a Mac running UNIX, is a good prospect for Apple business products.

However, there is no upgrade path through these products, although both Mac and IIGS can share peripherals and AppleTalk. They are essentially incompatible — except both share the Mac "look and feel." Products like *MacPaint* and Activision's *Paintworks Plus* for the IIGS are totally color-, data-, and software-incompatible, but if you know how to use one, you already know how to use the other.

The unifying force that transcends the product incompatibilities is the "look and feel." So by aggressively protecting the Mac and IIGS look and feel, Apple can lock in its upgrade path and reap the benefits when its education customers graduate into the business world and demand the power to be Apple's best customers.

So Apple will protect itself from the attack of the generics (ever wonder why Sculley's third direct report is a lawyer?), while still taking advantage of third party diversity and mobility. UNIX magic running on the 68000-family will provide the upgrade path, as the Mac serves as a business system "microframe."

Therefore, Apple's product line is the Apple look and feel, available on a growing continuum of products, each appropriate to its market segment and distribution. And each able to generate the high margins necessary to maintain the growth. ☐

Power Users Vs. Super Users In Business

In the micro industry, distinct terms often become blurred. For example, the distinction between *power* user and *super* user is being lost, yet their impacts on the industry are remarkedly dissimilar.

Power user has a lovely, macho, young-exec-on-the-make kind of feeling. More megahertz! More storage! Make DOS more complex — I can handle it! More is never enough. Hardware specs make the heart beat faster, and the next software update number becomes a badge of honor. (Some skeptics will note that a power user is someone who would rather play with his PC than get his work done.) Almost all the advertising and hyperbole that bubble around a new product or feature announcement seem directed to this insatiable, power-mad compustud. (But, God bless these power users — they push the market along to innovate and compete.)

But the *super* users like Danielle Barr of the Bank of New England and Karl Kendall, manager of the information center at Metropolitan Life, deal with the personal side of the personal computer. Their strength is in the number of users who depend on them to keep the systems going and growing. They deliver mega support to micro users.

For the super user, compatibility, upgradeability, ease-of-learning, ease-of-teaching and ease-of-instalation aren't described neatly in brochures, but are measured by experience. So what began as a job to evaluate products grows into the task of internally developing application software. And with that change, the super user leaves the flat world of specs and "industry benchmarks" for the depths of systems, people and office politics.

This depth makes issues that seem far removed from the keyboard suddenly take on importance. I didn't expect Kendall to be affected by the legal wrangling about "look and feel," of software. He was worried because applications that his organization paid people to develop may run into legal problems. Such industry infighting over user interfaces, site licensing, copyright infringement, operating systems and micro modes may make entertaining press, but only add to the risk involved in any new purchase decision. Long after industry mistakes fade from the press (or courtrooms), the super user still has to answer the phone and provide support.

Super users deliver mega support to micro users – and micro users is another phrase for people.

Another surprise when I spoke with Barr and Kendall was their replies to the question of the "ultimate product." Power users could likely go on for megabytes about the new features and power they would like to see delivered. Barr, however, said she needed more people to help support her large user base — not more products. (Although products that would be easier to support and learn would be helpful.) Kendall had no realistic ultimate product but demanded that any new product not only meet his needs but fit his system. (Imagine the "discussions" he must have with the power users after every NCC and Comdex!)

Because the super user is given the responsibility to fit together, fix up and patch all the pieces, any new whiz-bang will have to meet super user tests that just don't fall into neat columns. While the power user delights in the joys of change, the super user can only justify change when the benefits overpower the support problems. That's only fair, because the power users will be telephoning the super user whenever things don't work.

To meet this responsibility, realism seems to be the best armor for the super user. Barr's comment that her bank's micros have provided the expected benefits was painfully simple: "Yes, because our original expectations were quite low." In contrast, TV ads bombard us with happy talk about how a networked PC will revitalize and energize (and even resurrect) a tired organization and allow you to fly first class. Like the warning box on cigarette ads, Barr's words should be run across the screen. ☐

Jan Lewis is a well-known industry analyst and president of the Palo Alto Research Group, a consulting firm for the microcomputer industry. This article has been reprinted with permission from Computer Insider, *PARG's newsletter.*

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Industry News

By Hartley Lesser and Patricia Lesser

Apple Computer Clubs Competition

Apple Computer Clubs International (Cupertino, CA) has officially opened Competition '87, the fourth annual Apple Computer Clubs Merit Competition for student members and advisors in the US and Canada. The competition offers winners a chance for an all-expense paid trip to Washington, D.C., where they will be honored at an awards ceremony and will participate in other planned educational activities. Contact John Marvell at 800/343-1425 for further information.

Free Update For AutoCAD AEC Architectural

Autodesk, Inc. (Sausalito, CA) has announced that the company is shipping version 2.5K of *AutoCAD AEC Architectural* free of charge to all registered users. The new version allows users to make door and window insertions in walls with a thickness greater than 12 inches, and also corrects some minor errors in the previous version of the product.

Bridge To Acquire Phoenix Technology

Bridge Communications (Mountain View, CA) has signed a letter of intent to acquire Phoenix Technology Inc. (Santa Clara, CA). Phoenix will become a wholly-owned Bridge subsidiary specializing in LAN products for government and high-security applications.

DEST Publish Pac With Graphics

DEST Corp. (Milpitas, CA) will be shipping Silicon Beach Software's *SuperPaint*, a graphics and imaging program for use on the Mac Plus, as part of its *Publish Pac* scanner software. *SuperPaint* features a full palette of painting tools, a complete tool box of drawing tools, and Silicon Beach's LaserBits capability for editing 300 dpi images. *Publish Pac* software works with DEST's PC Scan and PC Scan Plus page scanners.

DRI's New Protected Multitasking System

Digital Research (Monterey, CA) has initiated shipments of a new release of a protected mode, real-time, multitasking operating system that supports MS-DOS 2.1 programs, FlexOS V1.3 This is the first product from DRI's Flexible Automation Business Unit and is the first independently supplied operating system for CIM systems.

GE's Defense Contract

General Electric Research and Development (Schenectady, NY) has been awarded a $4.4 million contract by the U.S. Defense Advance Research Projects Agency through the Army Research Office. The company is to pioneer a computerized "intelligent control system" which will speed the commercial production of high-quality gallium-arsenide crystals. This new technology should also be transferable to the production of other difficult-to-grow crystals, such as neodymium-based materials for high-powered lasers under development for industrial applications.

IBM Cuts Prices

IBM (Rye Brook, NY) has reduced prices on two models of its XT computer and one AT model. The single unit price on the XT Model 286 has been reduced to $3,395 from $3,995, and the XT Model 089 is now $2,660, as compared with $2,895 previously. The AT Model 068 is now $3,395, down from $3,995.

Letraset Changes Plans

Letraset USA (Paramus, NJ) has announced that *LetraPage*, the desktop publishing program it acquired from Boston Publishing Systems, is not ready for release and will be returned to the originating company. Letraset has, however, retained the rights to *LetraHyphen* and *LetraIndex*, both developed by Boston. Letraset did acquire the exclusive worldwide rights to market *Ready, Set, Go!*, Version 3.0, from Manhattan Graphics.

Lifetree's Flexible Corporate Site License

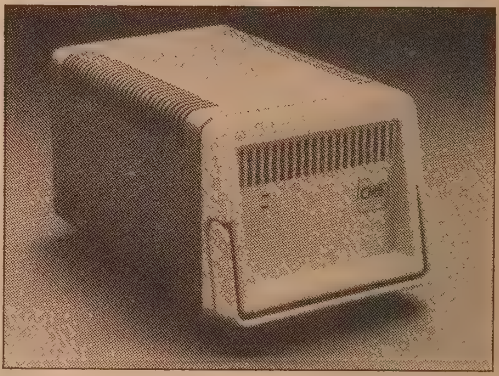
Lifetree Software, Inc. (Monterey, CA) has a new, flexible Corporate Site License Program for its recently-released *Words & Figures* product. Customers with as few as 15 PCs may cost justify participation in the program, which includes dealer incentives and discount pricing for em-

New From CMS

CMS Enhancements Inc. (3080-A Airway Ave., Costa Mesa, CA 92626, 714/549-9111) has introduced several new subsystem products. The first is Data Exchange, a SCSI storage subsystem that links the Apple IIe and IIGS with the Macintosh Plus, enabling the systems to share files and data. The new subsystem consists of a SCSI hard disk drive featuring 320 MB of mass storage and proprietary software developed by CMS which converts data developed on either the Mac or the Apple machines so that it can be read by either machine. The system supports one Macintosh and five Apple II PCs and is 20 times faster than AppleTalk. ($7,995)

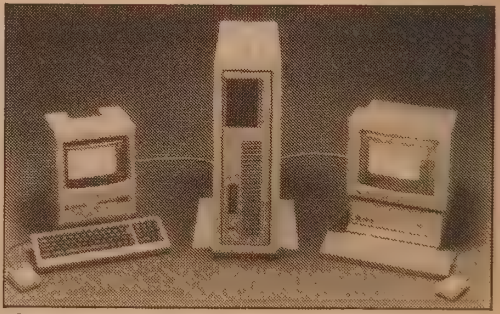
Also introduced was the company's first 40 MB, 3.5-inch subsystem for the Apple II and Macintosh. Designated the S-40, this subsystem employs proprietary technology to achieve an average access time of 29 ms. ($1,995) CMS is also offering an Apple II compatible SCSI interface card to OEMs and computer dealers that enables a II system running ProDOS to support up to two hard disk drives utilizing the SCSI protocol, or to share a common hard disk drive with the Macintosh. The card is designated the CMS SCSI II Interface and can support either two SCSI hard disk drives or two partitions on the same drive. ($129)

Also debuting is CMS's Data Tower, an external mass storage subsystem that features 140 to 320 MB of storage, consisting of a single, high capacity disk drive in a deskside pedestal. With the CMS SCSI II Interface card, the Data Tower will work with the Apple II family as well. ($4,995 for 240 MB, $6,495 for 320 MB)



CMS's Data Exchange is a fast, SCSI-based link between Mac and Apple II machines.

The S-40 is CMS's fast 40 megabyte, 3.5 inch subsystem that lets Apple II and Macintosh machines share a common hard drive.



The CMS Data Tower is an external SCSI-based mass storage system for Macintosh or Apple II (with SCSI card).

Hartley and Patricia Lesser are veterans of computer publishing, having published over 500 feature articles and reviews in computer magazines worldwide and assisted in founding four national computer publications, including inCider. *They have also worked at* PC World, Softalk Publishing, *and several other publications, and founded two online computing magazines,* MicroToday *and* Corporate Computing. *They currently publish and edit* Computing Today! *a weekly computer magazine on the GEnie personal network and the NewsNet business network. They can be reached at (415) 828-1528.*

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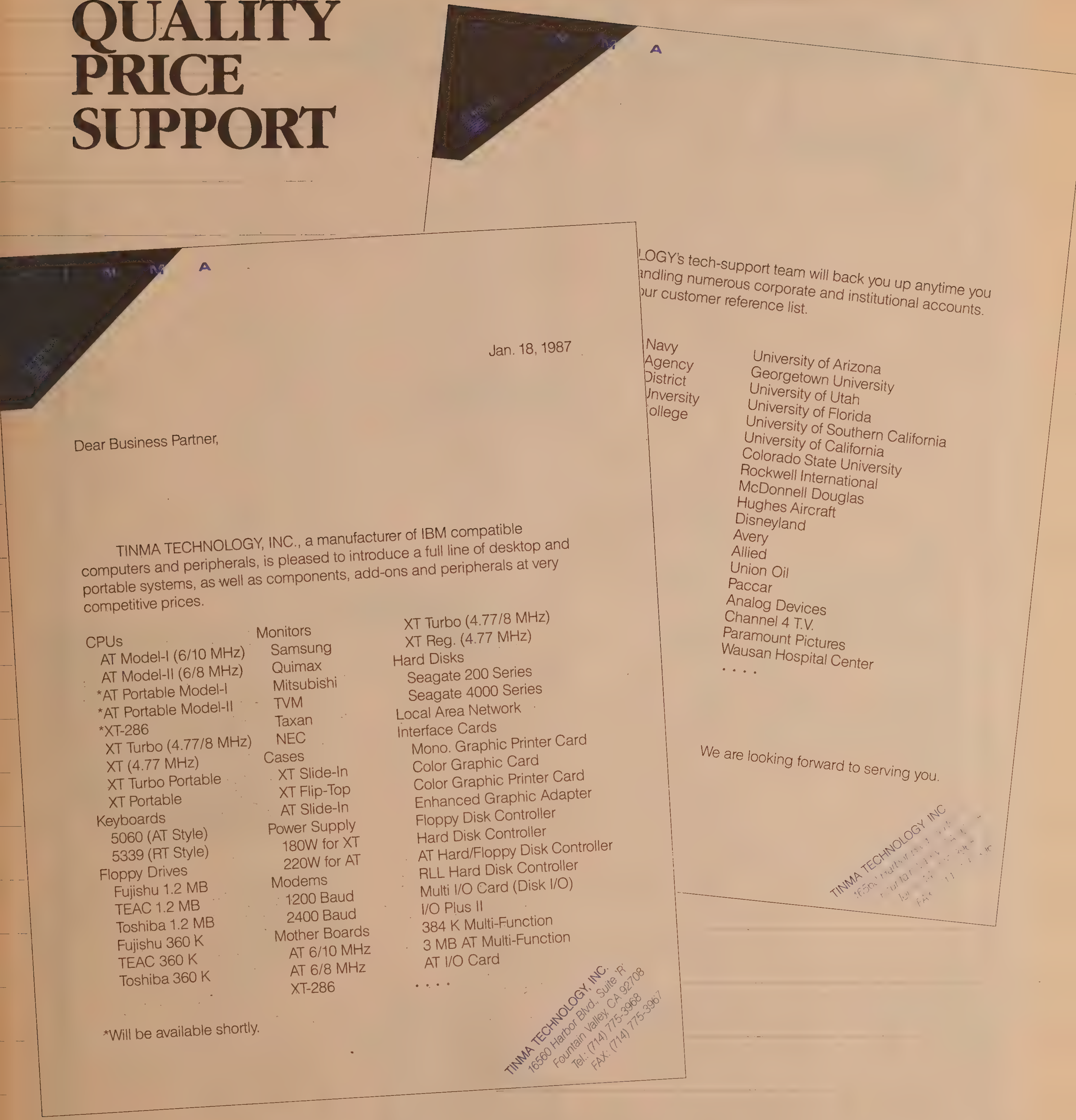

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Origin Systems Moves

Origin Systems, the home of such classic entertainment software as Lord British's *Ultima* series, Ogre and *AutoDuel*, has moved to a new address. Origin Systems is now located at 136 Harvey Road, Building B, Londonderry, NH 03053, 603/644-3360.

Pecan Acquires Jack2

Pecan Software Systems Inc. (Brooklyn, NY) has acquired all rights to *Jack2*, an integrated software package featuring word processing, graphics, database and spreadsheet. The program was purchased from Business Solutions, Inc., and the initial release is for IBM micros and compatibles.

AppleLink Gets Glue

Solutions Inc. (Montpelier, VT) has announced that *Glue's* ImageSaving and displaying capability will be made available to AppleLink users. Users of *Glue* and AppleLink can "print to disk" from almost any Macintosh application and send the resulting file, including graphics, to AppleLink. The recipient will be able to display, print, or even copy from the file without having to own a copy of the creating application.

Spectrum Holobyte/Nexa Merger

Spectrum HoloByte, Inc. (Boulder, CO) has merged with the Nexa Corporation (San Francisco, CA), with the new company being named SPHERE, Inc. SPHERE, in turn, was acquired by Pergamon Press (London, England).

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Electronic Arts (1820 Gateway Dr., San Mateo, CA, 94404, 415/571-7171) has introduced the *New Technology Coloring Book*, a creativity tool that teaches users about modern technology while painting electronic images. This offering is a simple, color-by-number system that contains prepared images representing various scientific categories such as the body, the universe, lasers, computers, genetics, interstellar communication, and more. As these images are colored, either with the user's personal choice of color or with guidelines from the computer, visual changes will occur to help the user understand and learn more about the technological topic being portrayed. For the Atari ST and Amiga computers. ($19.95)

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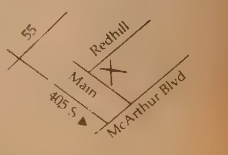

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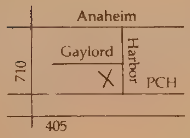

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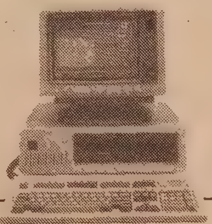

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Proposed Optical Disk Standard

Optotech, Inc. (Colorado Springs, CO) has announced that it will propose a disk format standard to the American National Standards Institute (ANSI) committee which is establishing standards for 5¼", write once optical disk drives. The proposal, one of several before the committee, is the only one to closely couple track format with an error correction system. Optotech officials believe these two elements must be considered together to ensure data integrity over the life of the media and under worst-case conditions. The error correction code (ECC) specified in the proposal was developed by Data Systems Technology President Neil Glover and has already been endorsed as a potential ANSI standard by the X3B11 Committee.

RUMORS

■ In a recent legal case, Activision has settled an out-of-court disagreement with a group of stockholders for nearly $4.25 million. Actually, $2.5 million will be offered as compensation by Activision in common stock, the remaining millions to be fronted by venture capitalists, underwriters and insurance. The suit was filed back in 1983 by shareholders claiming that the company had not informed stock purchasers of the impending decline of the video game market.

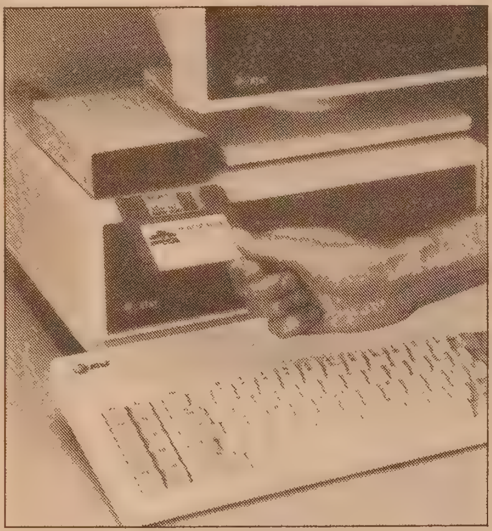
■ Aldus still plans a March release date for *PageMaker 2.0* for the Macintosh. This upgraded version is expected to feature automatic kerning, automatic dictionary-based hyphenation and justification, plus the ability to work with 128-page files. There is also purportedly file compatibility with IBM PC-based word processors, as well as with the PC version of *PageMaker.*

■ Now rumors abound about Apple's intentions to acquire some major companies—after all, what would you do with over $500 million in cash? Alleged targets for takeover include the likes of Sun Microsystems (manufacturer of workstations), Adobe Systems (the PostScript folks) and 3Com Corporation (LANs).

■ Ashton-Tate is upset again—this time at two publishers, Migent and Queue Associates. The Torrance-based publisher of *dBASE* and the like claims that these two companies are guilty of the high crimes of trade secret misappropriation, unfair trade competition and breach of contract.

■ Meanwhile, *dBASE MAC* is still buggy, so the release date for the program has been re-GANTTed for sometime during the second quarter of '87. Ashton-Tate has not indicated exactly what problems have plagued the Mac version of its most popular database product.

■ Talk about diversification! There was a time when Apple was the furthest product line from the minds of AST Research. Now that company has developed and is marketing all manner of drives and other peripherals for the Apple market, and is now planning to release a new modem line for the Macintosh. Four of them, all Hayes compatible, can be expected, with prices ranging from $500 to $1,900.



Manzana MDQ

Manzana Microsystems, Inc. (7334 Hollister Ave., Ste. B, Goleta, CA 93117, 805/968-1387) has introduced their Manzana MDQ host-powered 3.5-inch floppy disk drive system for upgrading IBM micros to the new 720K 3.5-inch disk technology. The drives are compatible with more MS-DOS desktop computers than any other product; they can read and write to virtually all 3.5-inch MS-DOS formats; they work with DOS 2.X or greater, and are easy to install.

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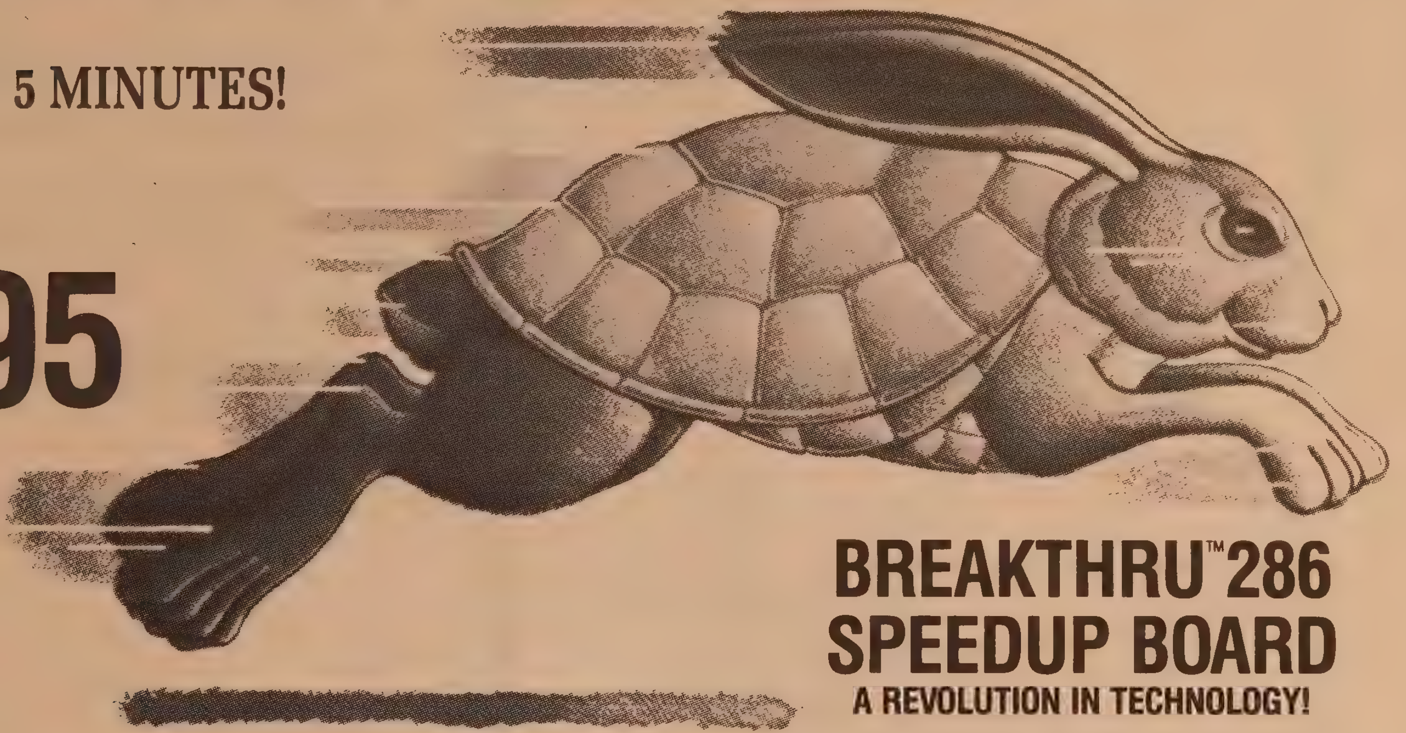

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Lotus 123 macro (640K)	3.16	2.64	3.69
Lotus 123 macro (256K)	3.07	1.77	3.54
Norton System Info Test	6.54	5.73	7.34

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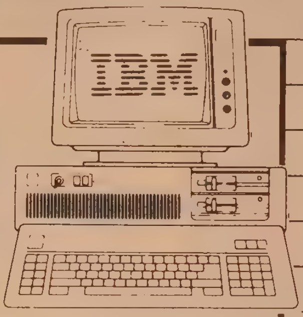

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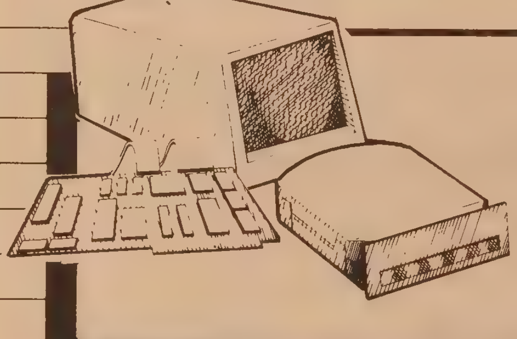

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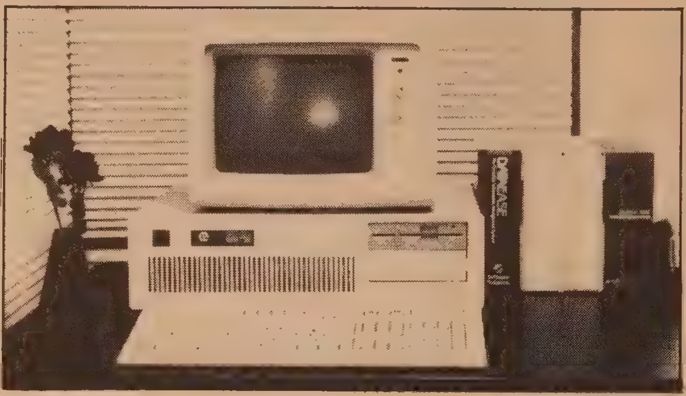

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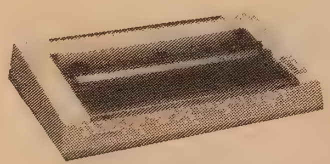

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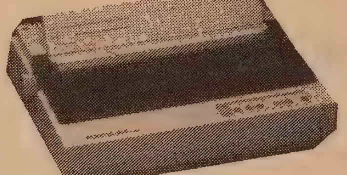

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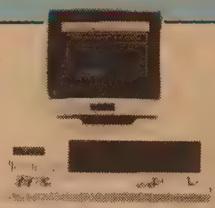

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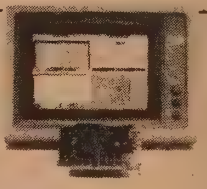

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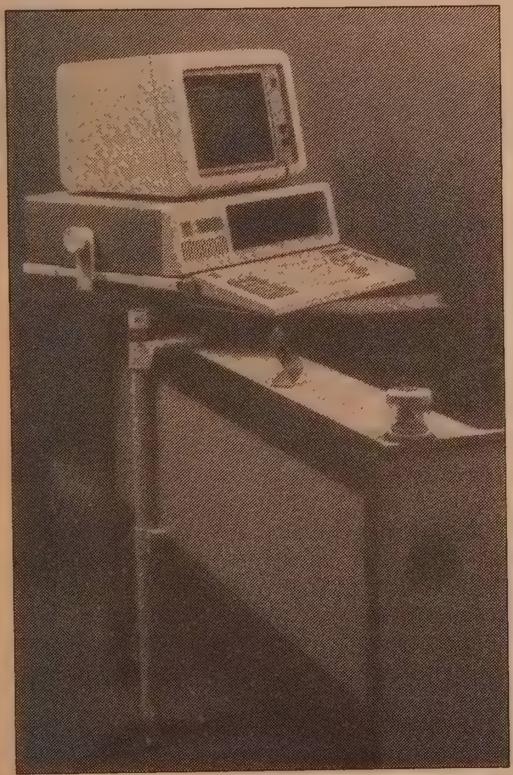
Strategic Simulations Inc. (1046 N. Rengstorff Ave., Mountain View, CA 94043, 415/964-1353) has released *War In The South Pacific*, for players who wish to experience a semi-real time campaign game set in the South Pacific during WW II. Three scenarios to choose from include The Battle of the Coral Sea, the Invasion of Guadalcanal, and the Japanese attempt at counterattack on Guadalcanal. Strategic wargamers have the weapons and firepower of over 400 ships, 17 types of aircraft and numerous infantry units to engage battle in one-,



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four- or eight-hour modes. The game is designed for two players or can be played against the computer; it was written by Gary Grigsby. For the Apple II computer family. ($59.95).

ST Chessmaster 2000

Electronic Arts (1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171) has announced that the highly acclaimed *Chessmaster 2000* is now available for the Atari ST computer. The *Chessmaster 2000* is based on the award-winning algorithm that was rated at 2,018 by the U.S. Chess Federation; it has more than 71,000 opening positions, as well as the largest opening move library ever available on a micro. There are 12 levels of play plus a Teach Mode and a Hint Mode. ($44.95)

Apple II Spindizzy

Electric Dreams (2350 Bayshore Parkway, Mountain View, CA 94043, 415/960-0410) has released *Spindizzy* for the Apple II computer family. This is a three-dimensional arcade game that calls upon you to examine a strange new dimension hanging around in space. Using your gyroscopic Geographic Environmental Reconnaissance Land Mapping Device (GERALD), you set off to explore and map this surrealistic new environment which is composed of more than 380 3-D screens. ($34.95)

Single-Package Zork Trilogy

Infocom, Inc. (128 Cambridge Park Dr., Cambridge, MA 02140, 617/492-6000) has, for the first time, released all three stories in the *Zork Trilogy* in one package at a saving of almost 50 percent off the individual purchase price. The *Zork Trilogy* takes place in a vast underground labyrinth—the rem-

RUMORS

- Now the rumors can finally cease regarding those PC clones that both Atari and Commodore were allegedly going to release—week after week, month after month. Both companies have provided more than TalkWare, as attendees at the Computer Electronics Show in Vegas can attest. The Atari MS-DOS compatible is called the Atari PC, and the Commodore line continues its allegiance to a numeric system, theirs being called the PC10-1 and the PC10-2. To be released later during the first quarter, the Commodore machines are available with 512K of memory and will sell for less than $1,200. The Atari PC will pack a pricing of around $700, and will sport a modem and printer port as well as 512K of memory. At the same show, Atari introduced its 800 XE machine.

- Also get ready for an Atari ST version of *Excel* from Microsoft. Negotiations are still currently underway between MS genius Bill Gates and Atari leader Tramiel, according to our sources. You could also expect a UNIX-compatible release from Atari, which is becoming more and more a member of the Top Dog computing companies.

- We've discussed MS-DOS boards for the Apple II family—now there's a company producing a PC board that'll run Apple DOS 3.3 software in an IBM micro or compatible. This offering is from a company called Diamond Computer Systems in Sunnyvale, CA: the board is called the Trackstar.

- For all of those who have purchased the IIGS and wonder when something like *DeluxePaint* will be available for their machine, hang on—to be released shortly is *DeluxePaint II* for the IIGS from Electronic Arts, a program well worth the wait!

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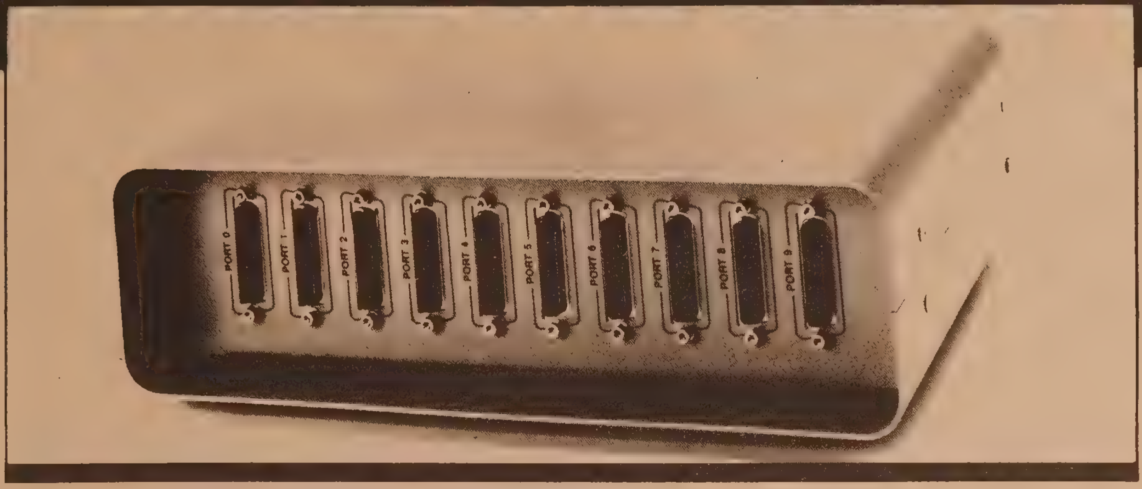

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Commodore Releases From Mindscape

Mindscape, Inc. (3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667) has announced five new arcade games for the Commodore 64/128 computers. The first is *Uridium*, where you must fight off a squadron of enemy Super-Dreadnaught ships, which are depleting your galactic sector's mineral resources. With fifteen levels of play, this game will be available in January of '87. ($29.95)

Trailblazer offers the player a series of soccer ball races that take you through hyperspace networks of changing color grids. One or two players can race through the game's 20 fixed courses on a split screen or travel through a random course. ($29.95)

The third offering is *Parallax*, which places you and four other astronauts on an alien planet. You must now thwart an imminent alien attack on Earth. With 3-D graphics, arcade action, puzzles and multiple play levels. ($29.95)

Mindscape's accurate and detailed martial arts simulation is *Uchi Mata*, based on Judo. Players become practiced at all of the major judo throws while competing against another player or against the computer. ($29.95) Another martial arts simulation is *FIST: The Legend Continues*, which puts the player in the role of Kung Fu master. Players marshal their skills to defeat such adversaries as Ninja assassins, mighty shoguns, warriors, mercenary soldiers, panthers and peasant villagers. ($29.95)

Macintosh Dark Castle

Silicon Beach Software, Inc. (P.O. Box 261430, San Diego, CA 92126, 619/695-6956) has debuted the Mac version of its *Dark Castle* recreational offering, which incorporates digitized sound and arcade adventures. The Black Knight is the evil ruler of the Dark Castle, and it is the player's obligation to find and defeat this villain in battle. You control the movements and actions of your hero as he battles his way through the Castle. The game features RealSound and offers stunning graphics and smooth animation. ($49.95)

New PC Games From SSI

Strategic Simulations, Inc. (1046 N. Rengstorff Ave., Mountain View, CA 94043, 415/964-1353) has converted five games to PC formats. The five converted games are: *Roadwar 2000, Rings Of Zilfin, Shard Of Spring, Phantasie* and *Wizard's Crown*.

Roadwar 2000 is a strategic adventure game set in the future where survival is dependent upon a good set of wheels. *Rings Of Zilfin* uses animated window graphics and economic considerations for success in this fantasy adventure. *Shard Of Spring* is a multi-player fantasy game that requires the rescue of the Shard Of Spring from its captor. *Phantasie* is also a multiple character role-playing game with a party of one to six characters searching for the nine rings to defeat the Black Lord. And *Wizard's Crown* features detailed tactical combat through dungeons and castles to retrieve the magic crown. ($39.95 each)

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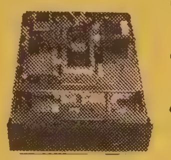

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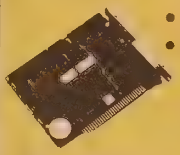

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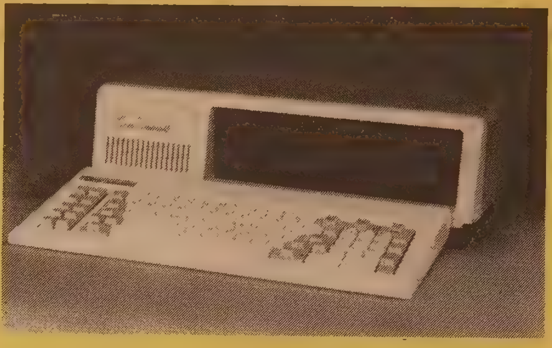

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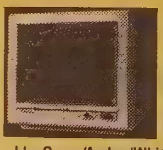

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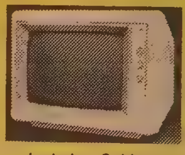

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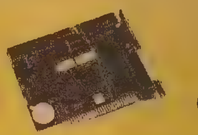

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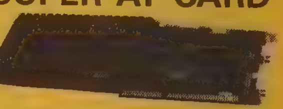

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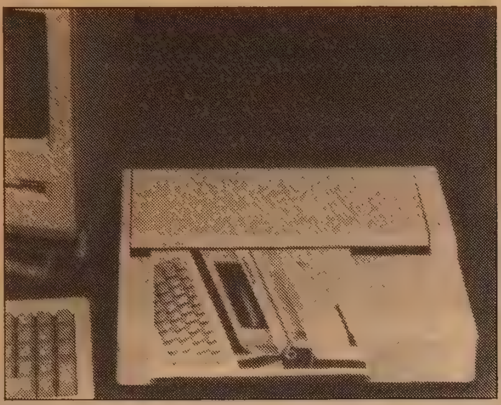

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Blockers And Finders

Sunburst Communications Inc. (39 Washington Ave., Pleasantville, NY 10570, 800/431-1934) has introduced a new program called *Blockers And Finders*. This program has inference and problem solving as its main focus and is designed to help students develop the ability to deal with conjecture and proof in complex situations involving the collection and organization of data. Players send Finds up, down and across a 4×4 grid in an attempt to find hidden Blockers (Titles, Arrows, or Detours) which, when encountered, change the direction of the Finder(s). Twelve levels of difficulty ensure a challenge for students of all ages and abilities. The pricing includes the program disk, backup disk and teacher's guide. ($59)

APPLE II FAMILY

Bank Street Writer Plus

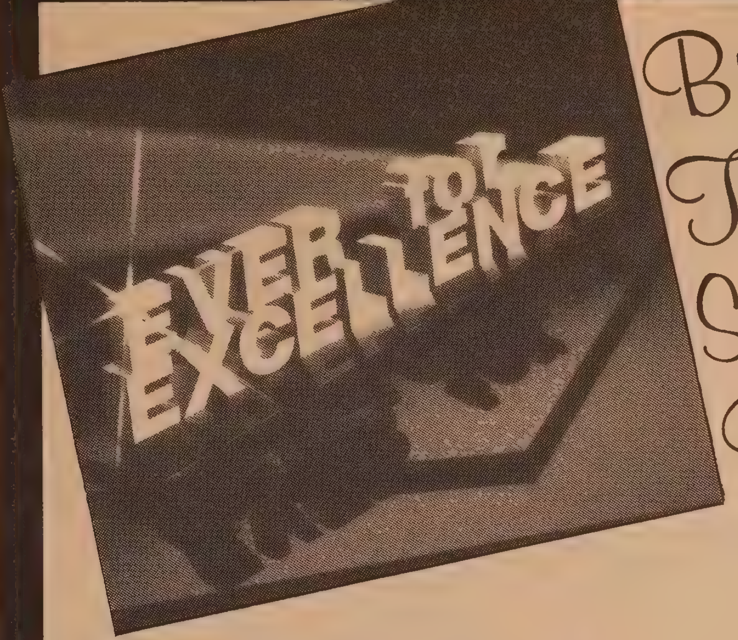
Brøderbund Software (17 Paul Dr., San Rafael, CA 94903-2101, 415/479-1700) has upgraded *Bank Street Writer* to the new *Bank Street Writer Plus*, which now includes a 60,000 word dictionary spelling checker, an online thesaurus, a high-speed editor, and pull-down menus. The program also allows more experienced users to create "short-cut" single-key commands to skip over traditional functions and prompts. For 128K Apple machines. ($79.95)

Tax Reform Analyzer

Intuit (540 University Ave., Palo Alto, CA 94301,415/322-0573) has released *The Tax Reform Analyzer* software program, which shows individuals how the recently signed Tax Reform Act affects them personally and what they should do to save money and avoid penalties. The program is a set of five worksheet templates for *AppleWorks*. ($29)

Springboard Publisher

Springboard Software, Inc. (7808 Creekridge Circle, Minneapolis, MN 55435, 612/944-3915) has introduced *Springboard Publisher*, a new powerful publishing program for the Apple II computer family. This program offers global page control, a



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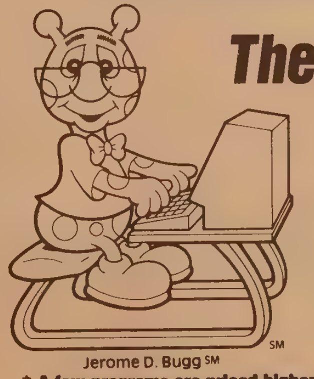

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comprehensive set of text entry and editing tools, an extensive graphics library and precision control of graphics, even to the pixel level. Graphics and text can be placed anywhere on the page and rearranged at any time. The program supports dot matrix, 24 pin printers and laser printers. *Springboard Publisher* will be released during the first quarter of 1987.

ATARI

New From MichTron

MichTron (576 S. Telegraph, Pontiac, MI 48053, 313/334-5700) has announced several new Atari computer products.

The first is *Trivia Challenge*, a game that allows you to dive headlong into a host of categories from the bizarre to the educational. Some of the topics include Pop Music, Sports, the Arts, and General Knowledge. Each question is given three possible answers while you have the opportunity to gamble the $10 allotted to you at the beginning of the game. The faster you answer the question, the more bonus points you receive. But getting the question right is more important than answering quickly. For the Atari ST system. ($39.95)

Mi-Print can print any text file you choose. The program gives you command over paper size, all four margins, headers, page numbers, pitch and line spacing. *Mi-Print* remembers the control codes and automatically sets up the printer to use the selected modes. For the Atari ST. ($29.95)

You can find out where your finances stand and what direction they are taking with *Your Financial Future*, a program that includes a wide range of features needed to successfully control your future. The program lets you determine the long term effects of inflation on your current balance, and the potential income you may receive on interest-bearing investments. The program can also give projected assets based on beginning balances, savings, and yield. For the Atari ST. ($39.95)

For the game enthusiast, there's *Pinball Factory*. Not only can you play a great game of pinball onscreen, you can enjoy hours of pleasure as you design, build and edit your own screens. You can even illustrate your playing board with pictures, arrows, or whatever you like.... the ball will pass right over them. As many as four players can participate. ($39.95)

Lastly, there's *Backup*, a utility that duplicates the contents of your hard disk drive to floppy disks, minimizing the risk of loss. The program also lets you restore the floppy backups to the hard drive after an accident. The program's specialized routines are very fast. For the Atari ST. ($39.95)

COMMODORE/ AMIGA

Two From Abacus

Abacus Software (PO Box 7219, Grand Rapids, MI 49510, 616/241-5510) has introduced a new software package and a new book. The first is *Technical Analysis System 128 (TAS-128)*, a comprehensive charting and analysis package for stock market investors. *TAS-128* is based on the company's successful *TAS-64*, but has been enhanced to allow the user to automatically update his or her portfolio through Dow Jones News/Retrieval Service or Warner Computer Service. ($59.95)

The company's latest book is *GEOS-Inside And Out*. This book, the first available for GEOS, describes the system for both the new and the experienced user. ($19.95)

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Aegis Draw Plus

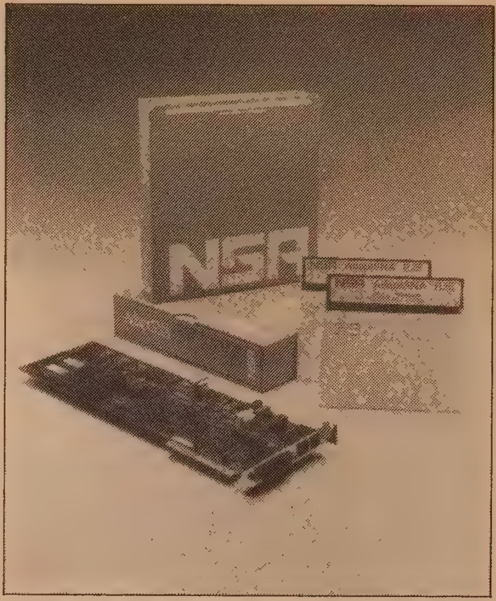
Aegis Development, Inc. (2210 Wilshire Blvd. #277, Santa Monica, CA 90403, 213/306-0735) has announced plans to release *Aegis Draw Plus,* a new CAD package for the Commodore Amiga computer. This program allows up to six independent drawings of 256 layers, each to be worked on using a basic 512K Amiga, although a megabyte of RAM is recommended. Full 16-color capability is available, and drawings may be saved in the Amiga's standard IFF file format for use in other programs such as *Aegis Images, Graphicraft* and *Deluxe Paint* paint programs. ($259.95)

Deluxe Paint II

Electronic Arts (1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171) has released *DeluxePaint II* for the Amiga computer. This improved graphics tool introduces over 50 new effects, featuring the ability to create perspective effects, stenciling, fixed backgrounds, gradient fills and pattern fills. The Toolbox contains ten built-in brushes, and you also have the ability to rotate ellipses before placement. Artists can mix to their own specifications any of the colors in the palette of 4,096 and control the percentages of red, green and blue as well as hue, saturation and value. ($130)

Deluxe Music Construction Set

Electronic Arts (1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171) has released *Deluxe Music Construction Set* for the Amiga. This Amiga version of *DMCS* turns the computer into a desktop-based professional music studio. The program provides users with complete input, editing and notation tools for quick and simple composing. A Score Window, featuring a work staff, is where music is entered, edited and reviewed. Cut and paste options are prominent in *DMCS,* giving users the ability to move single notes or whole chords from one location to another, both horizontally and vertically. You can also transpose your score up or down with just the click of the mouse. The program includes a selection of digitized instruments and also supports MIDI keyboard performance. ($99.95)



RJE/Background allows efficient micro-to-mainframe communications without tying up the PC.

RJE/Background

Network Software Associates, Inc. (22982 Mill Creek, Laguna Hills, CA 92653, 714/768-4013) has announced a new communications software product that allows Remote Job Entry (RJE) PC-to-mainframe communications and file transfer in background mode on IBM micros or compatibles, while another PC-DOS application runs concurrently in the foreground. The product is called *RJE/Background* and allows the PC user to connect with a remote mainframe and then continue using his or her PC for other purposes. ($785)

IBM AND COMPATIBLE

MagicFont

Computer EdiType Systems (509 Cathedral Parkway, Ste. 10A, New York, NY 10025, 212/222-8148) has introduced *MagicFont,* a new font-generation program that allows anyone to design fonts and symbols to suit his or her own individual taste. With *MagicFont* and their own word processing system, users can create special symbols on the fly. The program includes easy-to-use templates, so users can create and edit fonts and symbols by simply filling in the blanks. *MagicFont* converts user-created symbols into downloadable fonts for HP LaserJet Plus-compatible laser printers, and the fonts can be used with any application program that uses soft fonts. ($59)

Visual Forms

DeereSoft, Inc. (P.O. Box 1360, Melbourne, FL 32902, 305/768-2477) has introduced *Visual Forms,* a program for PC users that allows you to create quality, customized forms for output to dot matrix, daisy wheel or laser printers. *Visual Forms* provides varied features which enhance its ease of use. Standard, legal or custom form sizes, automatic line and box drawing, copy justification, automatic underlining of text or spaces, cut and paste with trial positioning, shading,

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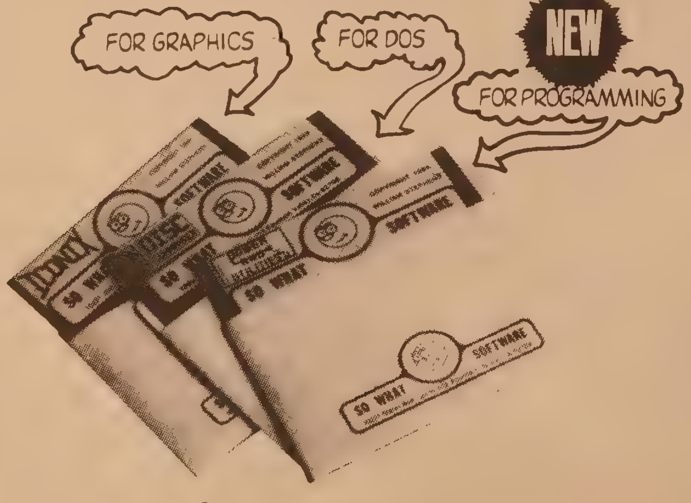

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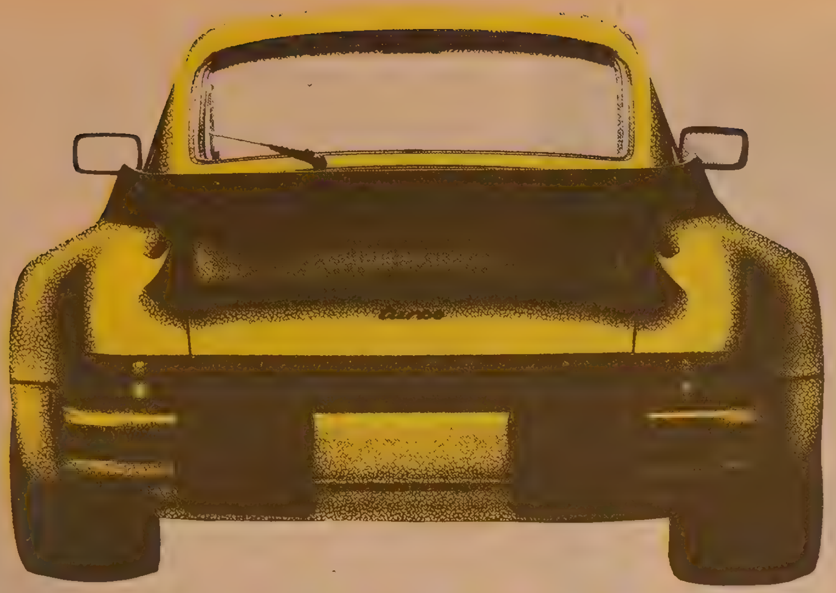

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patterning and automatic checkoff box are just a few of this program's features. ($89.95)

Color Magic

Lifetree Software Inc. (411 Pacific St., Monterey, CA 93940, 408/373-4718) has introduced *Color Magic*, which allows you to add color to the application programs you use on a daily basis. You can match your video display to your mood, your decor, even the color of your favorite jewelry or tie. *ColorMagic* works with an EGA board and provides a number of predefined palettes, many of which are based on the ergonomic benefits of green or amber for optimal readability and reduction of eyestrain. The program is completely interactive and provides context-sensitive online help. The program is also compatible with *TopView*. ($39)

RUMORS

■ Hayes isn't the only company now throwing charges and banging desks and threatening people for copyright violations in telecommunication technology. Now, US Robotics has decided to take on both Hayes and Bizcomp and has filed a restraint of trade suit against both companies. Punitive damages of around $5 million are being sought by US Robotics.

■ The Hyundai car has made quite an impact on the car-buying consumer. Now, their computer division has purchased a minority interest in Blue Chip Electronics, based in Chandler, AZ. It appears as though the South Korean firm is planning to make additional moves into the distribution side of the business as well as the OEM arena.

■ Predictions for IBM products to see the light of day in '87? They range all the way from a much better Token Ring network to a 386-based microcomputer (probably more aptly termed a micro-workstation), a low-end PC packed with as much as 1 MB of RAM and CGA built into the motherboard and sporting an 8086 CPU, a new AT system that hums along at 10 MHz with a built-in 3.5-inch drive.

■ Those in the know are all predicting a Proprietized Big Blue, as IBM is reputedly tired of the gains made by other companies copying what they've already produced. Expect to see units that are packed with the necessary equipment, including communications and printer ports, with one operating system that'll range through all of the IBM products.

■ If you're into desktop publishing with IBMs and compatibles, but are more than somewhat frustrated over the variety of file formats for clip art and other graphic elements, the answer may soon be on the way. From a company called PC Clip Art in Georgia, a new two-way file transfer utility will be available that will enable you to bi-directionally convert files from and to: *PC Paintbrush, PC Paint Plus, GEM Paint, MS Windows Paint, EGA Paint, Dr.Halo DPE* and BLOAD format files. Plus, the conversion will also transfer files from IBM format into Macintosh format, and Macintosh to IBM formats! So, you could take a 72 dpi file created with *MacPaint* and convert it to IBM format at 300 dpi! Way to go, PC Clip Art!

■ For PC desktop publishers, keep an eye out for the next *ScenicWriter* version from ScenicSoft, Inc. (Edmonds, WA). The new version has a 60-day, money back guarantee and will support the Ricoh LP4080 and Xerox 4045 printers.

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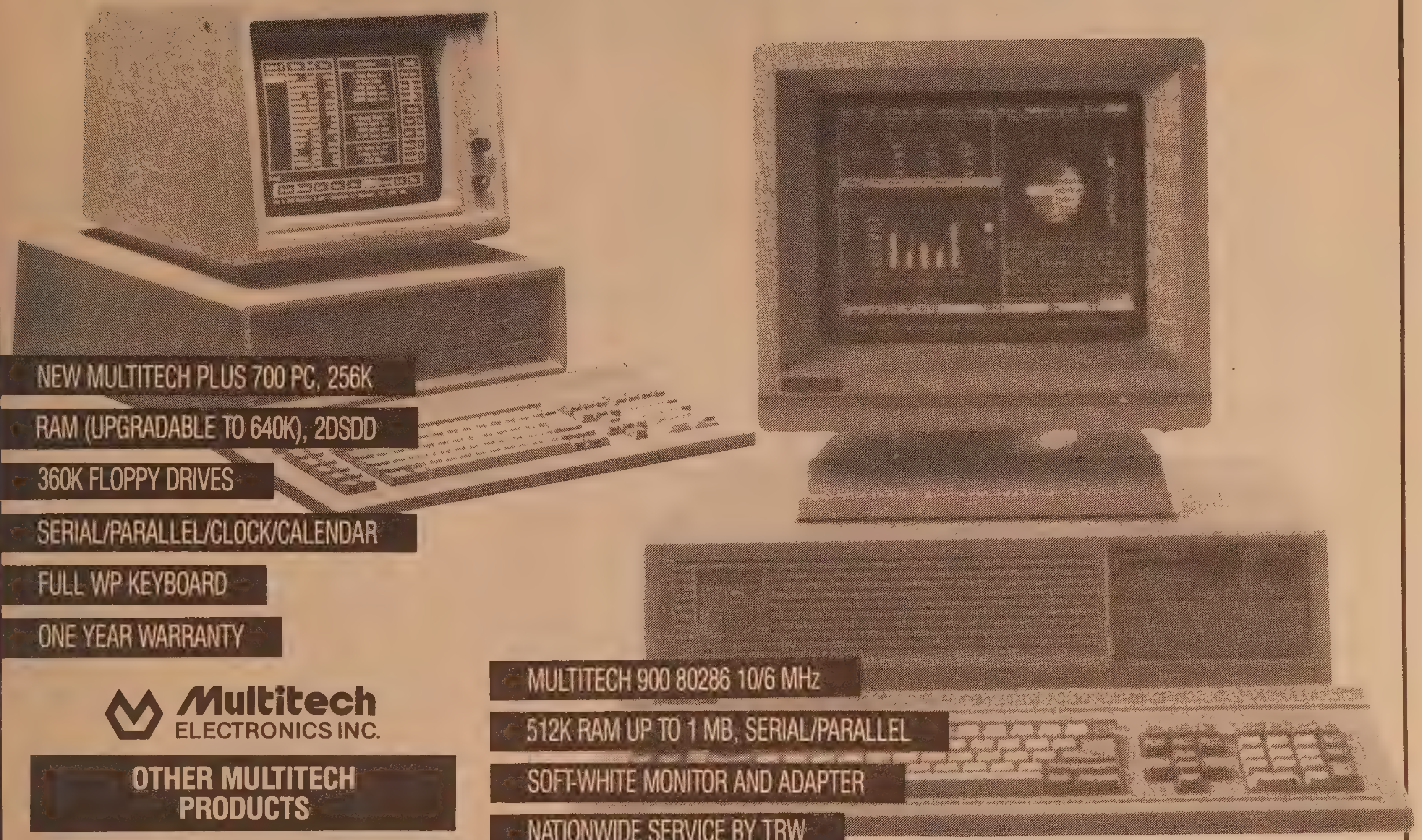

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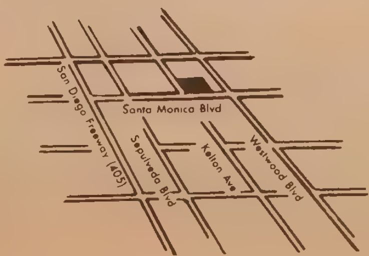

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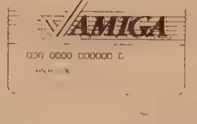

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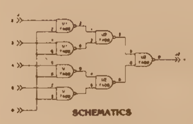
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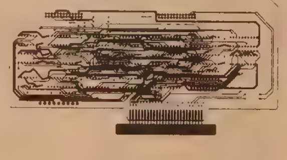

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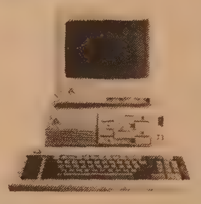

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Lotus Freelance Maps

Lotus Development Corp. (55 Cambridge Parkway, Cambridge, MA 02142, 617/577-8500) has announced the shipment of *Lotus Freelance Maps*, a collection of companion map sets designed specifically for use with *Lotus Freelance Plus*. There are five individual sets: Continents and Countries; U.S. Counties; U.S. 3-Digit Zip Codes; U.S. Major Cities and MSAs; and U.S. Complete Set, which includes all of the listed sets plus Congressional Districts. Each map set provides the user with a variety of map boundaries and labels. The price for the complete set is $395, with individual sets priced at $145 each.

FastTrax

Mark Elfield & Assoc., Inc. (4206 Terrace St., Oakland, CA, 94611, 415/652-2231) has introduced *FastTrax*, a disk optimizing program that reconstitutes fragmented files on diskettes and hard disks, including hard disks with DOS partitions larger than 32 MB. *FastTrax* improves drive performance and drive life by reducing disk seeks. Unlike other disk optimizers, *FastTrax* places most files within disk cylinder boundaries, eliminating track-to-track seeks when accessing these files. The user may assign frequently-used files near the DOS File Allocation Table and relegate rarely-used files away from this table. The program also offers a visual report that shows fragmented disk areas along with other useful file statistics. ($39.95)

Windows Clip Art Collection 1.1

Micrografx, Inc. (1820 N. Greenville Ave., Richardson, TX 75081, 214/234-1769) has recently introduced the *Windows Clip Art Collection Version 1.1*. This new release improves the quality and quantity of symbols available. There are now over 500 art-quality images from which a user can select. The *Clip Art Collection* is now packaged with *Windows Draw*. Each image was hand-crafted and the collections consist of five diskettes of symbol libraries and artistic images. The images are compatible with *PC PageMaker, Windows Draw* and *In*A*Vision, Windows Write* and *Notepad* and Palantir's *Filer*. The Collection, as a separate entity known as Version 2.0, is available for $99.95.

Software Bridge 2.0

Systems Compatibility Corp. (One East Wacker Dr., Chicago, IL 60601, 312/329-0700) has announced *Software Bridge*, version 2.0. The new version allows file conversions among nine popular word processing packages: *DisplayWrite 3, Microsoft Word, MultiMate, Samna, Volkswriter, Wang PC, WordMARC, WordPerfect* and *WordStar. Software Bridge* allows users to convert document files to and from various word processing formats. Converted documents retain the function and format codes which are normally deleted by ASCII transfers. An editable, mirror-image document is produced which is fully compatible with the target package specified. As many as 99 documents can be processed automatically. ($149)

PageWriter 2.1b

The 'Puter Group (1717 W. Beltline Hwy., Madison, WI 53713, 608/273-1803) has released version 2.1b of *PageWriter*, an IBM micro and compatible typesetting system with preview that outputs to laser printers and typesetters. The program now includes user definable keys and a "counting" text editor with automatic justification and hyphenation, including expandable word exception dictionary. Kerning and other typographical refinements are standard. The program comes with a user's manual that contains more than 60 examples and a 90-minute video training tape. A 30-minute demo video tape is available for a refundable $15. The price of the program is $295.

XyWrite 3.1

XyQuest, Inc. (PO Box 372, Bedford, MA 01730, 617/275-4439) is now shipping *XyWrite*, version 3.1, which offers several new features. The program now has up to nine windows, with the user able to define each window size. There are newspaper-like snaking columns. Auto-hyphenation and micro-justification are also supported. The new version also includes variable vertical spacing and many powerful file management and text handling features.

NETWORKING/ COMMUNICATIONS

PC MacBridge/AFP

Tangent Technologies (5720 Peachtree Prkwy, Norcross, GA 30092, 404/662-0366) has announced *PC MacBridge/AFP*. This is IBM PC software for file serving over AppleTalk LANs. The software comes in both Client and Server modules. The AppleTalk Filing Protocol (AFP) is a high level protocol layer of AppleTalk, and by adopting this standard, the PC MacBridge/AFP Client Module will be compatible with all AFP servers expected to be released by other major vendors, as well as Tangent's own model. The IBM will be able to use these files servers, making database files or spreadsheets accessible to both the PC and the Macintosh. ($150 per client). The Server Module can act as a server to both the IBM PC and the Macintosh and will also serve as a PostScript print spooler ($500 per server).

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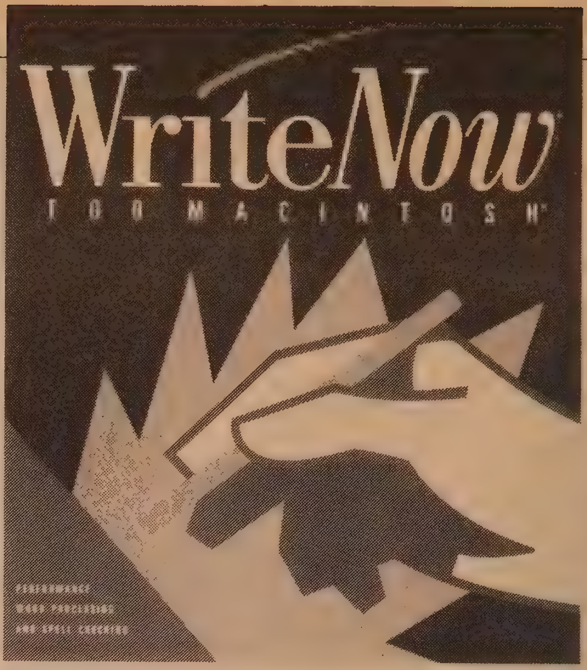
Writing Made Easy

WriteNow For Macintosh combines the power you expect from a dedicated word processing system with lightning speed and easy operation. True WYSIWYG editing is possible—headers, footers, footnotes, page breaks, large characters, and the ability to show one-to-four columns onscreen just as they will appear when printed. *WriteNow*, which includes a 50,000 word spelling checker, runs on any Mac with at least 512K memory. Contact T/Maker Company, 1973 Landings Drive, Mountain View, CA 94043, (415) 962-0195.

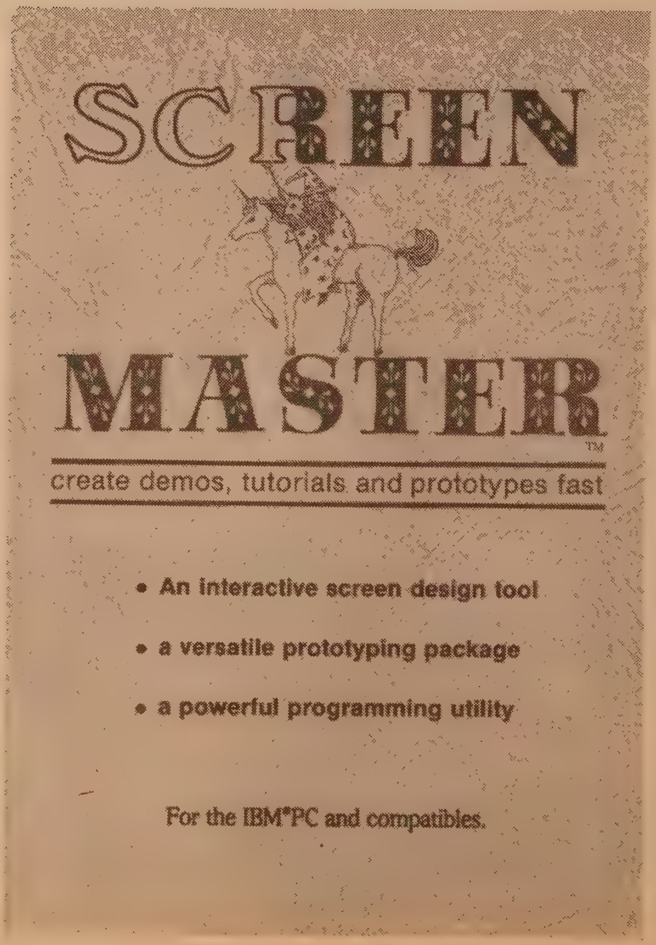

WriteNow
FOR MACINTOSH
PERFORMANCE
WORD PROCESSING
AND SPELL CHECKING

Think And Write With MindWrite

MindWrite assists Macintosh users in capturing thoughts on paper. This powerful word processing program lets you write the way you think. For instance, if you feel most comfortable putting all your thoughts down at once and polishing later, use *MindWrite* to enter text as it comes to you, then use outlining to rearrange and structure your ideas. Or try outlining first and expanding with text later. *MindWrite* gives you a number of options to help you create, edit and format text. Available from MindWork Software, P.O. Box 222280, Carmel, CA 93922, (408) 624-0522.

Coming To A Screen Near You

Screen Master, from Genesis Data Systems, is a program for IBM-PC users who require effective and visually attractive screens. The package includes everything you need to create powerful video displays, animated self-running or user-interactive demos, tutorials, prototypes and slideshows. Designed for the professional and non-professional alike, *Screen Master* requires 256K of memory and will run on most IBM-compatible video cards and monitors. *Screen Master* can be yours for $99.95 from Genesis Data Systems, 5403 Jonestown Rd., Harrisburg, PA 17112, (717) 652-1200.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create demos, tutorials and prototypes fast
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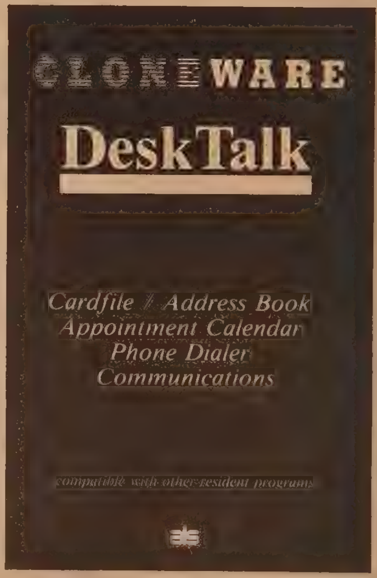
For the IBM®PC and compatibles.


CLONEWARE
DeskTalk
Cardfile / Address Book
Appointment Calendar
Phone Dialer
Communications
compatible with other resident programs

DeskTalk Chatter

More fanfare from the makers of Cloneware. *DeskTalk*, their latest product, is an easy-to-use, menu-driven desk organizer and communications program for the PC/XT/AT. Included with the package are calendar, card filer, phone dialer and 100% Hayes-compatible communications program. To talk more about *DeskTalk*, call Advanced Logic Systems at (408) 747-1988. They are located at 1283 Reamwood Avenue, Sunnyvale, CA 94089.

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- FULLY ASSEMBLED AND TESTED

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- AT FDD & HDD CONTROLLER
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- 512 K MEMORY ON SYSTEM BOARD
- FULLY ASSEMBLED AND TESTED

ONLY ~~$1449~~ NOW **$1149**

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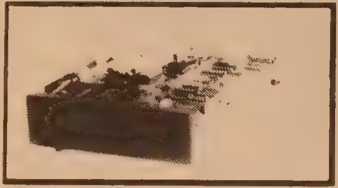
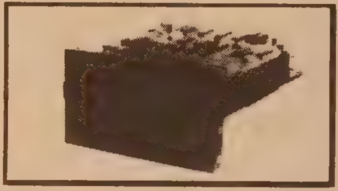


40 Track	$79 ea List $99
80 Track	$89 ea List $109

For IBM-XT

Floppy Drive Full High



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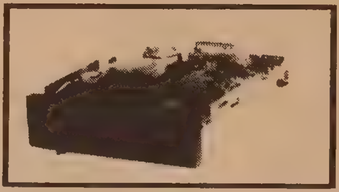

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For IBM-AT and Compatibles

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5 Meg .... FULL HIGH	$99 ea List $129
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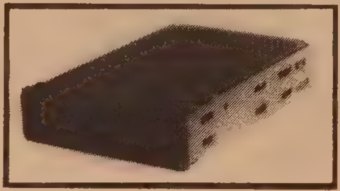
Sold Out ~~40 Meg .... FULL HIGH Formats to 32.8~~	~~$349 ea~~

60 Meg Tape Back Up
For IBM PC/XT/AT and Compatibles



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Includes: Controller, Cables,
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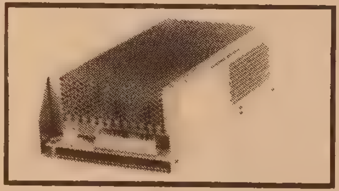
ASTEC 65 Watt Switcher



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Replacement for Tandy Model IV
KAYPRO-EAGLE

$39 ea 2 For $65
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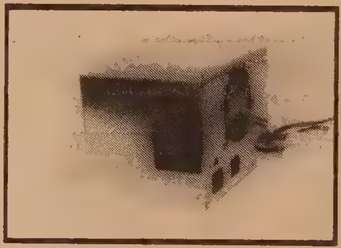
Dimensions: Length 8.0", Width 4.4", Height 2.4"

200 Watt Power Supply



For IBM-AT and Compatibles

$129 ea
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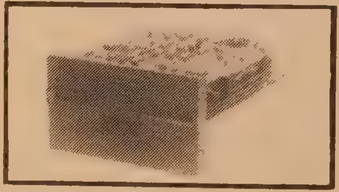
- + 5V - 7.0 - 20 AMPS
- + 12V - 2.5 - 7.3 AMPS
- - 12V - 0 - 0.3 AMPS
- - 5V - 0 - 0.3 AMPS

Double your Disk Drive Capacity



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DS/DD 80 Track
Compatible with all IBM software PC DOS (3.1)
Allows you to read IBM Formatt Diskettes
Requires (1) 40 Track DS/DD Drive
Package Includes: 1 SA460 DS/DD 96TPI Drive, Device Driver and Installation Instructions.

½ High Version/$99
Includes Software

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Includes Software

Device Driver Sold Separately for $30

165 Watt Power Supply

For IBM-XT and Compatibles

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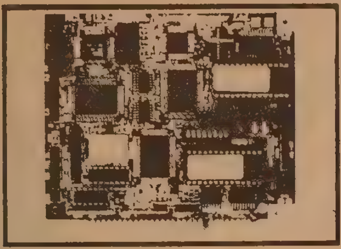
- + 5V - 2.3 - 15 AMPS
- + 12V - 0.4 - 7 AMPS
- - 12V - 0 - 0.25 AMPS
- - 5V - 0 - 0.3 AMPS

PERIPHERAL SALE

NCL 5127 Winchester Disk Controller For the IBM PC/XT and Compatibles



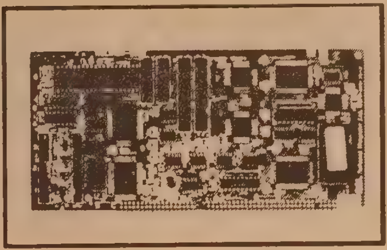
$109 ea

The NCL 5127 allows the user various options and applications from desk tops to portables. It's compact size is achieved through CMOS surface mount technology without sacrificing performance or quality.

*Add $6 for Set of Cables

- ST 506/412 Interface
- Drive Power Connector
- Switch Selectable Drive Types
- 625Kbyte Data Rate
- Operates With PC-DOS and MS-DOS
- Compact Size (3.9"x4.7")
- Automatic Surface Scan During Format
- Partition Option for High Capacity Drives
- Supports up to 16 Heads and 1024 Cylinders
- Programmable Interleave

NCL 5125 Winchester/Floppy Disk Controller For the IBM AT and Compatibles

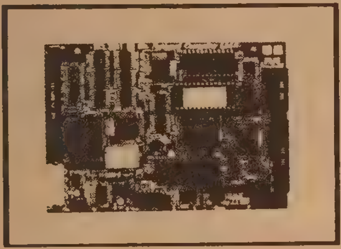


$199 ea

The NCL 5125 is a compact Winchester/Floppy combination controller retaining the "XT" height utilizing surface mount technology.

- Compact Size (3.9"x8")
- ST 506/412 Interface
- Controls Up to 2 Winchesters
- Supports Concurrent
- 32 Bit ECC
- Supports 1.2 Mbyte and 360 Floppy Drives
- 2 Mbyte Data Transfer
- Supports up to 16 Heads and 2048 Cylinders
- Overlapped Seeks

NCL 3011 SASI/3016 SCSI Winchester Disk Controller SASI/SCSI Interface Compatibles



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NCL offers you the choice of either SASI or SCSI interface capabilities by utilizing full scale IC integration in a compact 3.5" form factor board.

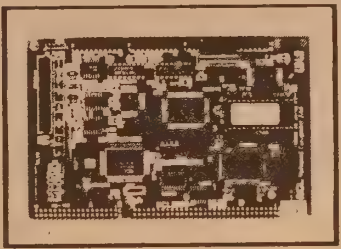
NCL 3011 SASI

- Compact Size (4"x5.75")
- 1 Mbyte/sec Transfer
- One to One Interleave
- Supports up to 16 Heads

NCL 3016 SCSI

- Compact Size (4"x5.75")
- 1.5 Mbyte/sec Transfer
- Disconnect/Reconnect and Arbitration
- Intelligent Bus (Multiple Hosts)

NCL 5126 Winchester Disk Controller For the IBM AT and Compatibles

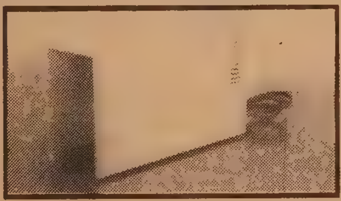


$179 ea

The NCL 5126 is designed exclusively for Winchester only allowing the floppy chip to reside on the main CPU board.

- Compact Size (3.9"x6")
- 2 Mbyte Data Transfer
- Controls Up to 2 Winchesters
- Supports Concurrent Data Operations
- 32 Bit ECC
- ST 506/412 Interface
- 16 Bit Data Transfer
- Supports up to 16 Heads and 2048 Cylinders
- Programmable Disk Parameters
- Overlapped Seeks

External Hard Disk Case with Power Supply



Case for (1) Full High Hard Drive ...HD-2... $89 ea
will accommodate 2 Half High Drives with 38 watt power supply

Same as above but with 76 watt power supply ..HD-2A... $149 ea

All units come with 6 ft. power cord
Add $6 to cover shipping on each case
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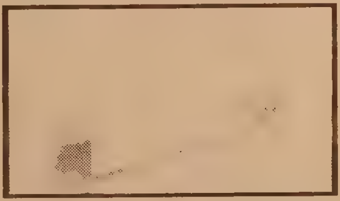

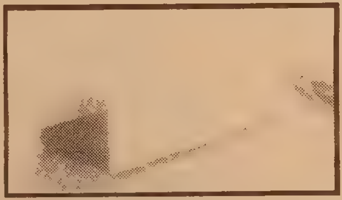

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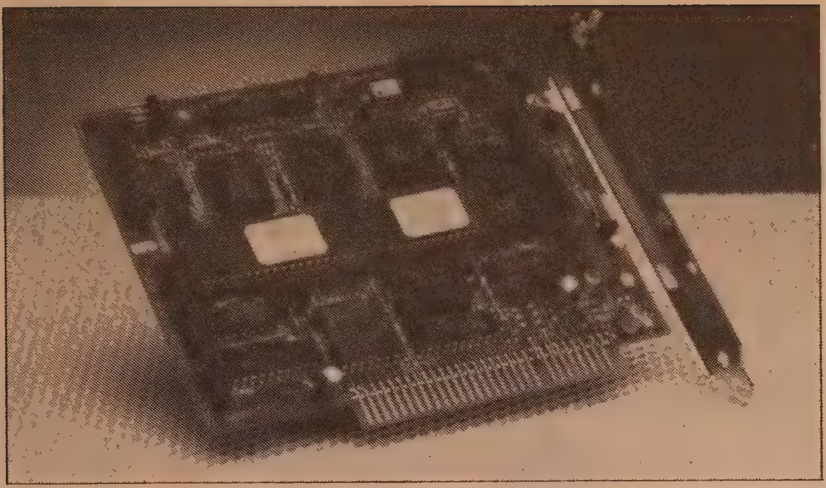

Adaptec ACB 2071 half card RLL controller

How To Add 50% More Storage To Your Hard Disk

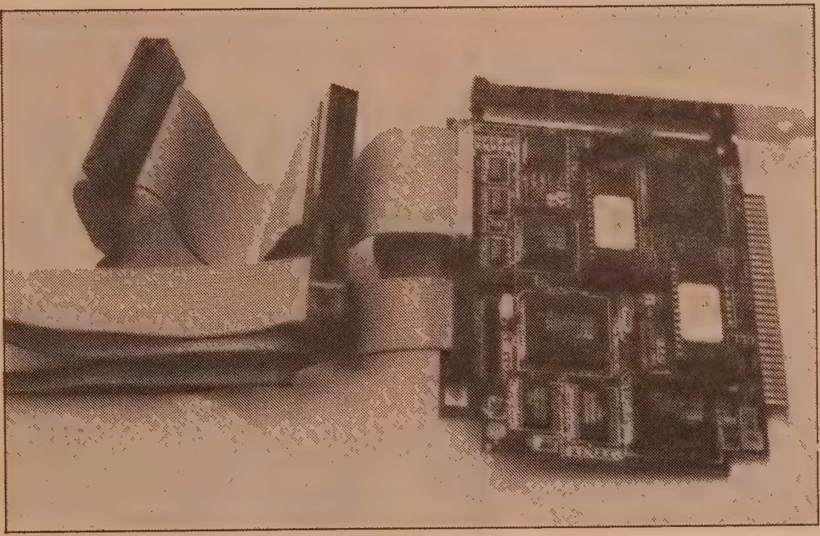
By Aubrey Pilgrim

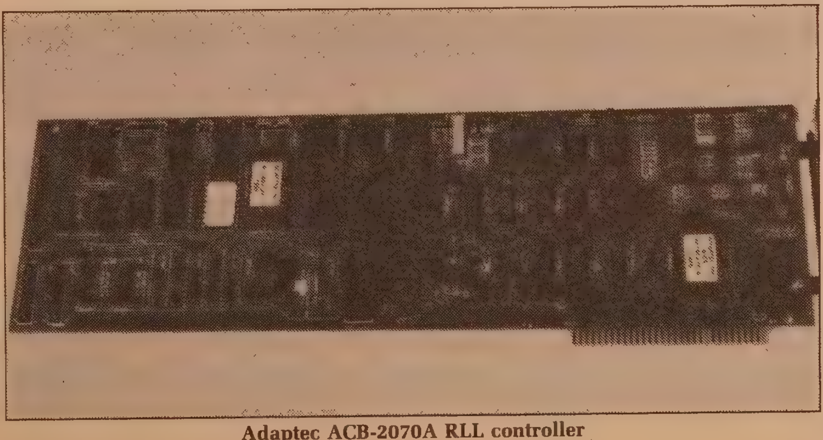
About three short years ago, ten megabytes seemed huge. IBM sold thousands of PC-XTs with ten megabyte hard disks. At the time, hard disks cost from $1500 to $2000 each; nowadays you can find the same hard disks at swap meets for as little as $75. The main reason the price has fallen so dramatically is that most people have found that ten megabytes is just plain not enough storage—especially for those software pack rats who, regardless of whether or not they'll ever need or use it, feel compelled to buy, beg, borrow, copy and store every piece of software they can get their hands on.

Also, as programs have become more sophisticated and user friendly, they take up more space on your disk. Programs like *dBASE III Plus* and *WordStar 2000* are now very easy to use, but each of them requires about two megabytes of disk storage. Even DOS 3.2 requires well over 300K of disk space for all of its commands.

If you're one of those people with an overcrowded ten megabyte hard disk, you have various options. You could take it out and use it for a door stop, or perhaps a boat anchor. You could then buy a hard disk with a greater capacity. However, these days a 20 megabyte hard disk may cost between $350 and $500.

A much less expensive solution would be to buy one of the Run Length Limited (RLL) controller boards. With one of these controllers, you can re-format your hard disk so that it will be able to store 50% more data.


OMTI Half card RLL controller


Adaptec ACB-2070A RLL controller

FORMATTING EXPLAINED

Formatting organizes the disk so that data can be stored and accessed easily and quickly. A brief analogy would be that of a developer of a piece of land. He would lay out the streets and create blocks. He would then partition each block into lots and build a house on each lot. Each house would have a unique address. A map of these streets and house addresses would be filed with the city.

When a disk is formatted, the tracks and sectors are laid out and a map is filed. This disk map is called the File Application Table (or FAT). Each time data is recorded on a disk, the location of that data is recorded in the FAT. When a disk has been used for some time and files have been recorded, updated, erased and recorded over again, parts of some files may be located in several areas of the disk. A file will be recorded in the first empty sector, or sectors if it is longer than 512 bytes. So if there is an empty sector on track 5, the drive will record as much as it can there, then move to the next empty sector, which may be on track 20. The location of each part of the file is recorded in the FAT.

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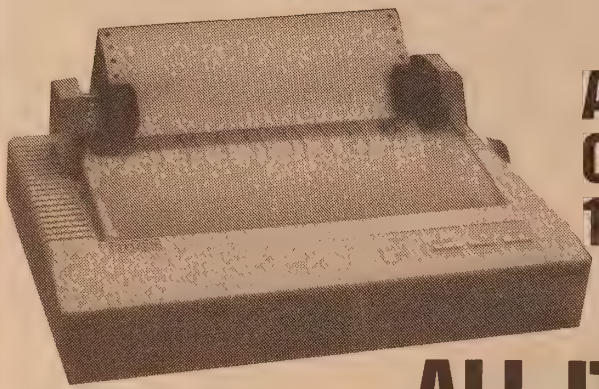

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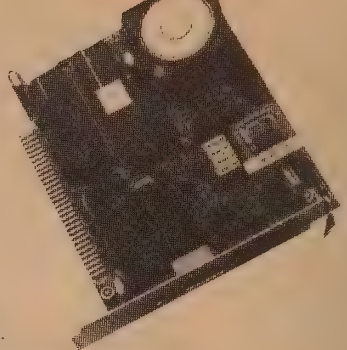

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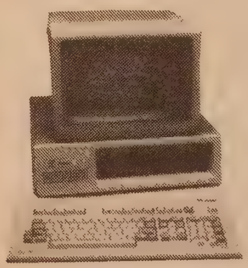

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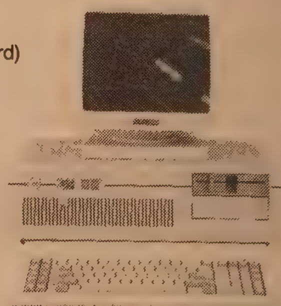

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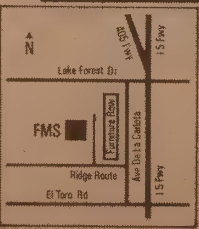

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Using these controllers, a 20 megabyte disk can give you over 30 megabytes; a 40 meg drive will give 60.

Most standard hard disk systems use the Modified Frequency Modulation (MFM) method. With this system, each track on the disk surface is formatted into 17 sectors, and 512 bytes can be stored in each sector. If we multiply 512 bytes by 17 sectors, we see that 8704 bytes can be stored on each track. A typical ten megabyte hard disk has 306 tracks on each side of its two platters for a total of 1224 tracks; 8704 bytes per track times 1224 equals 10,653,696 bytes. If you do a CHKDSK command on one of these disks, you may only see 10,592,256 bytes, because 61,440 bytes have been used for the FAT, the directory and other utilities.

The standard for the 360K floppy diskettes is nine sectors per track and 40 tracks per side. Like the hard disk, each sector can store 512 bytes, so 9×512=4608 bytes per track ×40=184,320 bytes per side or 368,640 bytes per floppy. But again, if you do a CHKDSK on a newly formatted diskette, it will show only 362,496 bytes. The other 6,144 bytes have been used for the FAT, directory and other utilities.

The RLL system was developed by IBM some time ago for use on large mainframe hard disks. A couple of years ago, Adaptec of Milpitas adapted the technology so that it could be used on PC hard disk controllers. Since that time OMTI of Mountain View and Western Digital have developed similar controllers. The OMTI controller is built onto a half card. The original Adaptec 2070A is a full size card, but they have recently announced a new half card version, the 2071.

The main difference in the RLL and the MFM systems is that the RLL system manages to squeeze more sectors onto each track. Each sector still has only 512 bytes, but instead of the MFM's 17 sectors per track, the Adaptec RLL has 25 sectors per track and the OMTI has 26.

RLL CONTROLLERS—WHAT THEY CAN DO FOR YOU

I have two IBM PC-XTs in the department where I work. For some time I've pleaded with my manager to let me buy larger hard disks, but there never seems to be enough money in the budget. I finally wheedled $150 out of him and bought an OMTI controller from Paramount Electronics in Sunnyvale for one of the XTs.

The controller came with two sheets of instructions for configuring the board for your particular type of hard disk drive and for re-formatting the disk. The instructions are fairly simple and straightforward, but Bill Boutin of Paramount volunteered to format the disk for me anyway.

I used a copy of *Fastback* to copy all of my files off the hard disk. I then pulled the hard disk out of the computer and took it over to Paramount. It took Bill about 15 minutes to format it.

A CHKDSK done before the hard disk was re-formatted showed that it had 10,592,256 bytes total disk space. After reformatting with the OMTI controller, which puts 26 sectors on each track, another CHKDSK showed 16,195,584 bytes of total disk space. After I showed this to my boss, he agreed to give me $150 more to buy a controller for the other PC-XT in our department.

Even though the two PC-XTs were ordered at the same time and from the same distributor, one had a hard disk from the IMI Corporation and the other had one from the Miniscribe Company. Bill wasn't sure that the OMTI would work with the Miniscribe, so we installed it with an Adaptec controller. Since the Adaptec uses 25 sectors per track, a CHKDSK showed that it had 15,572,992 bytes of total disk space.

This is a fantastic way to increase your disk capacity for a relatively low price. Using these controllers, a 20 megabyte disk can give you over 30 megabytes; a 40 meg drive will give 60. Bill Boutin has formatted several 80 megabyte disks to yield 120 megabytes.

Like most of the standard controllers, the RLL controllers will control two hard disks. The Adaptec controllers can control combinations of 5¼" and 3½" hard disks, or two hard disks of different capacities. The LaPine Technology Corporation of Milpitas has recently introduced a 3½" hard disk drive which uses the RLL controller to yield 30 megabytes.

WHAT THEY CAN'T DO

DOS 3.2 can only address 32 megabytes on a hard disk. Adaptec controllers will allow logical partitioning of large disks; two large capacity hard disks could be partitioned into as many as eight logical drives, with a total capacity of 256 megabytes, using DOS. However, special software would be needed for systems using more than 64 megabytes and for logical partitions three through eight. For these higher drives, it's recommended that you use a software driver available from Ontrack Computer Systems (612/941-4504).

This would appear to be a fantastic and relatively inexpensive way to increase a hard disk's capacity. But there's always the fly in the ointment. Some of the older hard disks will not work with these controllers. Adaptec has tested many drives and has found

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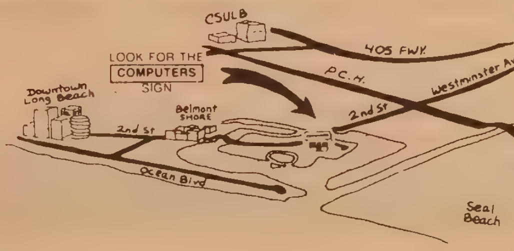

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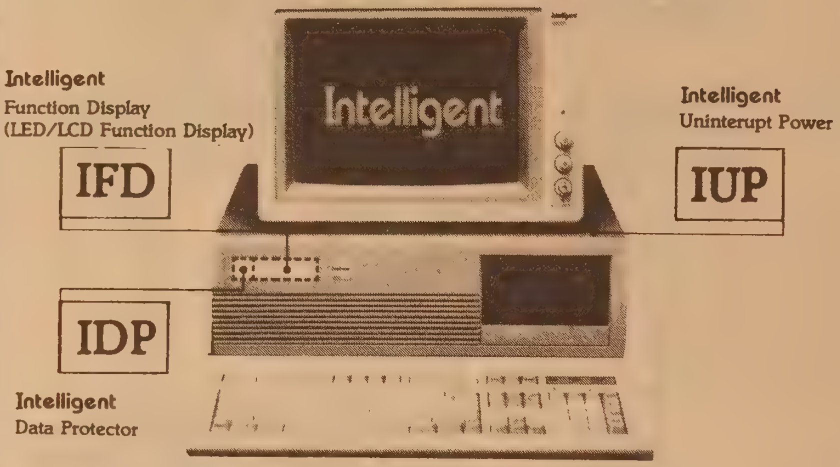
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that most of those that use the thin film-plated and sputter media will work with the RLL controllers. Many of the drives that use oxide media will not work.

The MFM encoding used on ST506/412 drives operates at a frequency of 5.0 MHz and a transfer rate of four megabits per second. The drives also use a 100 nanosecond data window. The RLL controllers operate at a frequency of 7.5 MHz and a transfer rate of 7.5 megabits per second. They use a 66.6 nanosecond data window. In order to use the RLL controller, the disk drive must be able to meet the higher specs.

Most newer drives will meet these specifications. Adaptec has published a fairly long list of the drives they've tested (see chart). If your drive is not on this list, Adaptec suggests that you contact your drive vendor before buying a RLL controller.

Note that Adaptec is a manufacturer and not a retailer. Besides Paramount Electronics of Sunnyvale, Wyle Laboratories of Santa Clara, the V.I.P.C. Company of Hayward, and several others sell the Adaptec RLL drive.

While Adaptec has put together a comprehensive user manual for the ACB-2070A controller, most retailers do not offer it. You can purchase it from Adaptec for $6. I would recommend it to anyone who wants to install one of these boards but is not too familiar with controllers.

LAST-MINUTE UPDATE

Two companies, Maynard Electronics and Systems and Software, have issued press releases stating that they have developed controller boards with the ability to double a hard disk's capacity. A Maynard spokesman said that the Maynard controller divides a track into 33 sectors instead of the usual 17.

By packing more electronics on the controller board, these companies are able to better control the flow of data to and from the disk. By using caching type systems, they are able to transfer data at a rate of nine megabits per second.

Both companies are still testing their boards, and both caution that the boards will not work with some of the older drives. Systems and Software has successfully tested some of the models from Seagate, Miniscribe and Maxtor. The company will offer two versions of its board, one for $495 and the other for $595. Maynard did not quote a price for its board. ☐

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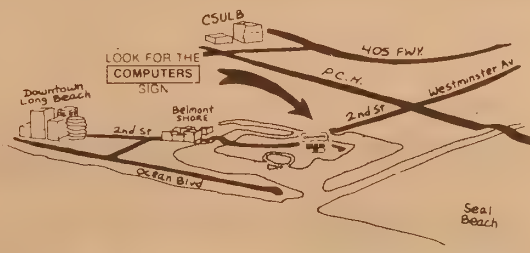

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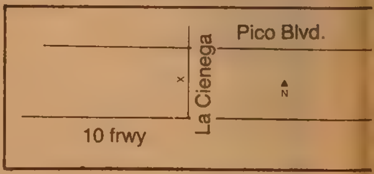
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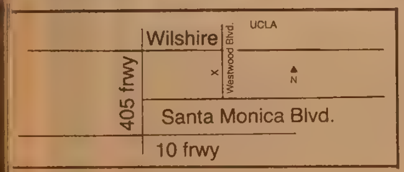

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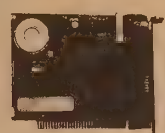

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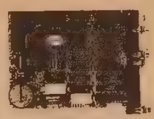

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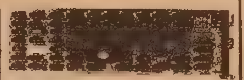

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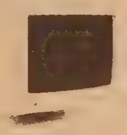

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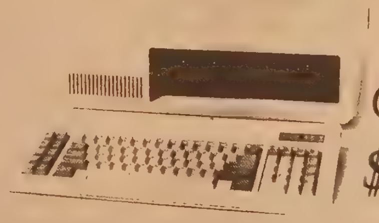

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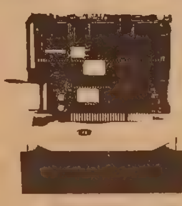

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Centram's TOPS

"Our objective in life," says irrepressible Centram founder Nat Goldhaber, "is to try to connect everything to everything." More modestly, he continues, "There are a few instances where we've actually done it."

He demonstrates one such instance by sitting down at his Mac Plus and clicking a few icons on the desktop, thereby accessing a colleague's ITT Xtra and opening a *Lotus 1-2-3* file. The file opens as an *Excel* document on the Mac; Goldhaber makes a few changes and sends the new document back to the ITT, where it ensconces itself as yet another *1-2-3* file.

TOPS, Centram's networking software product, was first released last summer and has already attained an installed base of 15,000 workstations, making it the leading LAN contender in the Macintosh arena. While price ($149 for the Macintosh software-only version, $389 for the card-and-software PC version) is undoubtedly a factor in this success, *TOPS'* most distinctive feature is its provision of transparent, real-time access between computers running incompatible operating systems, using AppleTalk or Ethernet connections. Operators of PCs and Macs can work on the same files, with each operator seeing the data in the local machine's familiar environment. By allowing this linking of incompatible machines, *TOPS* (short for Transcendental Operating System) protects a client's existing hardware/software investment and incidentally eliminates the need to retrain employees on unfamiliar equipment.

There's more. In addition to the Macintosh and PC versions of *TOPS*, the company offers *TOPS Print*, which allows IBM files, including graphics, to be sent directly to Apple LaserWriters and printed. Further, *TOPS* now runs on a variety of UNIX-based machines, allowing these more powerful computers to act as servers on networks with Macs and/or PCs, and there are plans to support various mainframe and mini operating systems in the near future.

Late in January, 3Com, a leading network supplier, announced plans to acquire Centram as part of its software division, citing the strategic importance of *TOPS* as an entry-level network product as well as the complementary nature of the two companies' product offerings. As a result of the acquisition of Centram, which will continue to operate at its Berkeley headquarters under Goldhaber's direction, 3Com plans to provide a full range of networking options and a smooth upgrade path for clients from small businesses and institutions to large corporations.

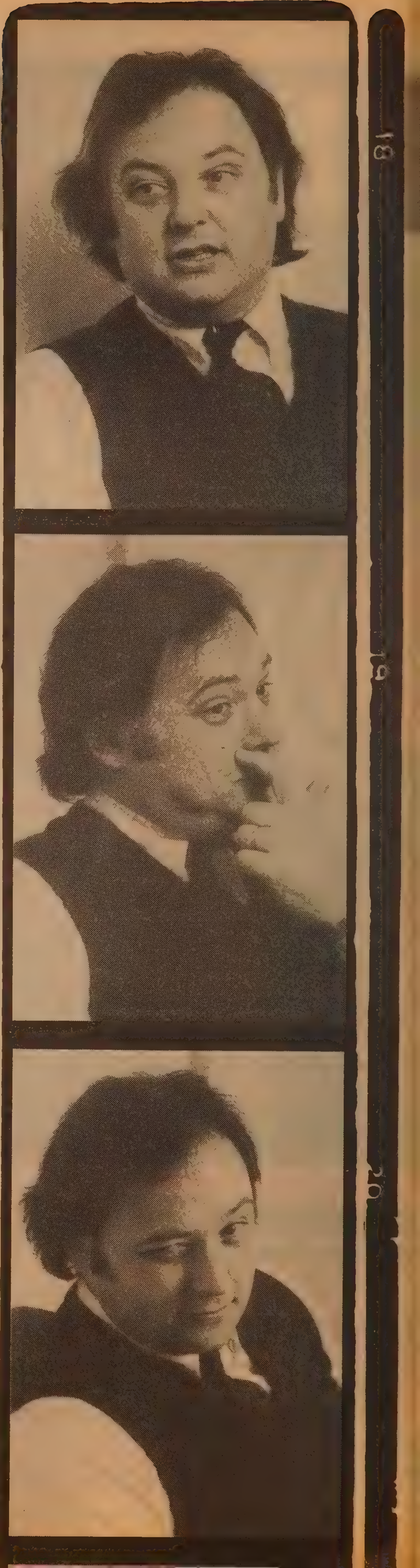
In the midst of meetings with 3Com, Goldhaber took the time to discuss Centram's history, its products and the philosophy from which they evolved.

What led you to start Centram?
Once upon a time a long time ago, Flash [co-founder Michael Pflaumer], our vice president of engineering, and I started a company, the predecessor to this one, to develop a local area network system that hooked together different kinds of computers and let people share data inexpensively. Our first effort was to develop a CP/M based network, because CP/M was the principal operating system in those days, that and Apple II. This was in 1982—it was pre-IBM.

We worked on that for a couple of years. We developed a CP/M based local area networking system; ultimately we licensed it to another company—my former partner became the other company and I licensed the product to him to market to the retail world. It did relatively well when CP/M was still an important operating system.

However, CP/M died rapidly after the PC came out, and in addition to that there was the dramatic rise, upon its release, of the Macintosh. So we reassessed our position and took a look at what opportunities there were, given the new world, and we came to the conclusion that the most interesting thing to do would be to network, not one single kind of computer, but multiple kinds of computers so that they can meaningfully exchange data across operating system boundaries in real time.

"We came to the conclusion that the most interesting thing to do would be to network, not one single kind of computer, but multiple kinds of computers so that they can meaningfully exchange data across operating system boundaries in real time."
—Nat Goldhaber,
Centram Founder



Photos By
Pat
Johnson

—It's All Connected

By Mary Eisenhart

The interesting story is that there were two people who helped us along our way indirectly. One was Tandy, and the other was Hewlett-Packard.

We had been invited to visit with a guy named Steve Leninger, who was the inventor of the Radio Shack Model 1. Radio Shack was just coming out with CP/M computers, drifting away from their TRS-DOS and heading in the direction of CP/M. We went to show him what our CP/M product could do, down in Texas, and he took one look at it and said, "Boy, this is interesting. But it only solves part of my problem. Is there any way you can actually link together all the different operating systems which Tandy sells?..."—which at the time were probably five, and none of them talked to each other.

We had already thought a little bit about the idea of linking CP/M and MS-DOS over our old CP/M network, because MS-DOS was starting to come on at that time. But we'd never thought about linking lots of operating systems together as carefully as we did after Tandy made that suggestion. We went away and we thought about it for awhile, and Flash said, "I think it can be done. I believe that the way to do it is by developing a meta-language or a super-set"—in fact, what it turns out to be is a necessary and sufficient set—"of operating system calls that can easily be mapped into the kinds of operating system calls each supportable operating system has internally." So that "open a file" in TRS-DOS 80 turns into "open a file" in MS-DOS.

We really started to think about that notion, and we reported that it was possible. Unfortunately Steve Leninger didn't stay there very much longer, and there was never an opportunity to do anything with Tandy. But we actually started work on the development of that concept, and I went out and raised money specifically for the development of that concept. We formed Centram Systems West in March of '84.

When we started, it was still our intention to link CP/M and MS-DOS. That was still our first goal. Then we went over to Hewlett-Packard—again, interestingly, to show work that we had done in the past and to suggest work that we might do in the future—and they said, "Forget CP/M—you should see this new Mac that Apple's just come out with."

Hewlett-Packard said that?

Some engineers at Hewlett-Packard said that. Of course they wanted us to link to their minicomputers as well, UNIX operating system and some of their operating systems—but they said the Mac was the new up-and-comer.

So they steered us strongly towards Apple. We went to Apple, we got reasonable levels of cooperation right from the beginning, and soon thereafter great enthusiasm for what we were trying to achieve, and so we put the whole thing together. Mac-PC is our first product—*TOPS* for the Macintosh and *TOPS* for the PC.

What distinguishes your net from anybody else's?

First and foremost, ours goes between operating systems. We are, as far as I know, the only product that can transparently link together different types of machines. So that, to the machine that you're on, the whole world looks like the same type of machine.

So if I opened a *WordStar* file in *MacWrite* on my Mac, it would look like a *MacWrite* file?

That's right, and more importantly, the files that are on the IBM PC look like icons on a desktop. And if I'm on an IBM PC looking at a Mac, it looks like MS-DOS entries, there's no icons.

What we've done, effectively, is fooled the machines into believing that the operating systems of remote machines are precisely the same as the operating system of the local machine.

The three operating systems we currently support are MS-DOS, UNIX, and various flavors of the Macintosh operating system, the old ones and the new ones. We support the Lisa running under *MacWorks*—the MacXL, to be precise. We also support the flat file system—the old MFS system—as well as HFS. So as long as you have a 512K Mac, it works.

Does *TOPS* support *Windows* on the PC?

Yes, with a caveat. The combination of *TOPS* plus Windows takes up a lot of memory. Windows is pretty hoggy, and there isn't a lot left for other stuff.

Are the new 80386-based micros having any major impact on your plans?

Yes. I think the 386 is a very exciting development, as is the 68020. We're seeing real 32-bit architectures emerging now that have multitasking capabilities, among other things, which makes life easier for the network developer than single-threaded operating systems running on non-multitasking machines. Right now we have to do a lot of fancy dancing to make a standard MS-DOS machine operate perfectly as a file server. Now we've *done* that, but we had to turn MS-DOS into a multitasking operating system, essentially, in order to do it. Now that task becomes easier, and in some sense more elegant.

More importantly, however, with the advent of more powerful CPUs, server devices no longer need to be limited to simply file servers. They can start to take on a host of other network services as well, which include of course the obvious ones like electronic mail and modem pooling, but much more importantly, I believe at least, compute servers. What that means is that your local machine can turn to a more powerful server device to actually do some of its number-crunching. That, I think, is the biggest upcoming advantage of the 386 machines, particularly when they're incorporated in specially designed file server devices.

Let me talk to you a little about what that means. There's 5 1/2 million 8/16 bit PCs out there, something like that, all the ones IBM sold, and their clones. And there's, at last count, 800,000 Macintoshes out there. Capability-wise, the CPUs are pretty much on a par with each other—maybe the Mac's a little faster, but it's in the same league. All of a sudden we're taking a quantum leap in capabilities with the 386 and the 68020.

Does that mean that you have to scrap an installed base of 5 1/2 million? Computer manufacturers would like that—they get to sell another computer to everybody—but realistically I don't think the population is going to be very interested in that, particularly since, after all, word processing worked fine on an 8-bit machine, and the difference between the operation of, say, *WordStar* on a Kaypro and *WordStar* on an AT is negligible. Most of the time it's sitting there waiting for your keystrokes. So there's plenty of horsepower, for the most part, in all those computers that are out there.

However, from time to time, you might want to do something that *does* require more horsepower. For example, accumulation of huge databases where it's necessary to sort in a certain way—for example, give me all the dealers who have sold more than three copies of *TOPS* in the last two weeks who are in a ZIP code that starts with a 6. That's a demanding piece of sorting, assuming there were thousands of dealers. We're talking about a lot of raw compute power needed for that, and from time to time that may be more than you want to do on your local machine.

Now if the files are all stored on a central file server, basically what you're talking about is a lot of network-based activity—sending out requests, having your local machine do a lot of sorting, reading files over the network—it's a very network-intensive and CPU-intensive sort of task. The question is, what could you do that would speed up that process? The answer is, with the 386 and the 68020 coming down the street, it's possible to have still-quite-inexpensive file servers that also function as compute servers.

What a compute server would do is basically this. My local machine

> "What we've done, effectively, is fooled the machines into believing that the operating systems of remote machines are precisely the same as the operating system of the local machine."

would say to the compute server, this is a task which is sufficiently CPU-intensive that I don't want to do it locally. Do it on my behalf, then pass back the answers. So the request that goes down the wires would be basically database primitives—please sort these records according to these criteria and pass back the answers. The compute server would then actually do that, so the network is not consumed, the speed at which it occurs is greater, and obviously the time involved for the end user is reduced.

This I conceive of as the next generation of network services that are going to make sense in an environment of much more powerful microcomputers. Not everybody in an office has to convert to a more powerful computer. I think this is an ideal situation, and we'd like to think that the way we've structured *TOPS* allows that to take place very efficiently and easily.

The other thing that it does is that in every copy of *TOPS* that's gone out, including the $149 Macintosh version, there is an embedded remote procedure call language. That's what people normally call it—we call it a Remote Function Protocol/RFP. What that means is that there is, as a part of *TOPS*, a language which allows one CPU to ask another CPU to do work on its behalf. That's right in *TOPS* already, and we are just on the verge of publishing to all potential developers the full specifications for how to access and use the RFP.

There's another interesting thing that is in our product as well, that we call Innerbase. Innerbase is actually a fully relational B-tree database system that's RAM-resident on the Macintosh. We use it for a very trivial purpose—important, but trivial—we use it for what we call name-scrunching, to take a Macintosh name and scrunch it down to the size that an IBM can use—which is to say eight characters followed by a period followed by three characters—whereas a Macintosh name can be 31 characters long and have spaces in it. However, that thing is also useful to anybody who wants to use it for anything. It's a real little database engine sitting in there—there's no user interface whatever—but we're going to publish the access points so that if a person wanted to do elementary sorts on a remote machine, he'll be able to do it through Innerbase and it'll be quite easy. This is not a replacement for a *dBASE II* or an *Omnis 3*, it's just another tool that developers can use and get for free when their users also have a copy of *TOPS*.

***TOPS* itself is a software product?**

We sell *TOPS* for the Mac, *TOPS* for the PC, and *TOPS* for UNIX. *TOPS* for the Mac is a software-only product, and that's because Steve Jobs in his wisdom stuck everything you need to do networking except the cables in the Macintosh, and gave it away for free.

The IBM PC does not have similar capabilities, so on the PC side of the world we provide a card; that card provides basically a network channel on the IBM PC that's capable of talking to what's built in for free on the Macintosh.

With UNIX machines there's two ways to access them—through their bus structure by providing an AppleTalk card appropriate for that bus, or by using a box called the Fast Path Box, which is developed by a company we're friends with in Walnut Creek called Kinetics. It's an AppleTalk to Ethernet bridge. Most big machines know how to talk to Ethernet already; this just plugs into their Ethernet port and provides AppleTalk on the other side, so Macs and PCs can be physically linked into the bigger machines. The product we sell for the bigger machines is just a software product—we give them a tape or some other media understandable by the larger machines, and load into memory the *TOPS* server module, and then it provides service to the Mac and PC through this linkage.

There's been a certain amount of unhappiness with the slowness of AppleTalk. Do you find this a limiting factor?

Well, there's two answers to that. One is: for most circumstances and most work groups, almost all the time, it's plenty fast. If you have between two and, say, 15 users in a work group, generally speaking the speed of AppleTalk is not a constraint on the network. When network performance goes down, it's usually because everyone is trying to read the same file at the same time, or just trying to use the same file server at the same time.

So the answer to your question is: generally speaking AppleTalk is in fact slow, but it doesn't make any difference. If you have a nice country lane and not a lot of cars traveling on it, you can still go at 55 miles an hour. It's only when you try to divert all the traffic off the freeway onto the country lane that you get into big trouble.

That's not the typical situation in most offices. In most offices, people work in work groups. They don't work in big groups of thousands and thousands of workers at the same time. It's typical for 10 or 15 workers to be together, not an infinite number. Under most circumstances, AppleTalk is fine.

The circumstance under which AppleTalk is *not* fine is when you want to have hundreds of users on the same net. Then AppleTalk is inadequate, and I predict with a relative degree of assurance that there will be an adequate means of handling that in the short term. Kinetics has come out with an Ethernet box that plugs into the SCSI port of a Mac Plus; we all hear rumors of an open-architecture Mac, and if there are Macintoshes with slots, presumably somebody will immediately make an Ethernet card. The thing is it won't be free anymore, or essentially free—it'll cost what an Ethernet card costs, which on a PC is currently $700.

> "With the advent of more powerful CPUs, server devices no longer need to be limited to simply file servers. They can take on a host of other network services as well."

What was behind the decision to support UNIX?

We are firm believers in the utility of this product in the academic and government computing environments. In both of those, UNIX is a central operating system, and it is particularly useful to be able to use a large UNIX server and small local workstations—the Mac and the PC as the front end, running their application programs locally, using the vast storage resources that have been collected on big servers. We feel that that's the right way to go.

We support AT&T UNIX and Berkeley UNIX. Until recently, Berkeley UNIX has had a richer set of functionality for network environments than AT&T UNIX; the next release of AT&T UNIX will include most of the Berkeley enhancements.

Right this second we support the MicroVAX and the VAX 750 and 780 series, running Berkeley UNIX. That product is being co-marketed by a little company who's in the same building we are called Mt. Xinu. Basically, Mt. Xinu is Berkeley UNIX hackers who didn't join Sun. They're very bright, capable people, and they sell the Unix 4.3 called BSD Unix.

I would guess we'll have Suns running in a couple of weeks. We support Pyramid, Sequent, Integrated Solutions, Cadmus, VAXes, and we run on an AT running UNIX. And it is our duty to do a version of this that runs on XENIX as soon as possible.

The idea is to provide *TOPS* servers in a variety of different operating systems. We are moving heavily into the minicomputer world, and ultimately our goal is to link to a few mainframe operating systems as well.

How does *TOPS* handle the commonplace problems on nets — the situation you were describing where everybody wants to access the same file at once, and data security, because it's very rare that you'd want everyone to have access to everything?

TOPS is a distributed file server architecture. Every copy of *TOPS* that we sell allows you to turn your machine into a file server, or to use somebody else's machine as your file server, or both at the same time. Without switching modes or anything—it takes two seconds to become a file server. Well, five seconds.

That's a special feature of *TOPS*—there are other networking systems that provide distributed file service as well, but nowhere is it this easy, or this clever. Actually part of that credit goes to Apple—they have a mechanism in AppleTalk called name lookup, which tells you in real time who all of the devices on the network are that are acting as file servers, or any other kind of service that you're looking for. In other networking sys-

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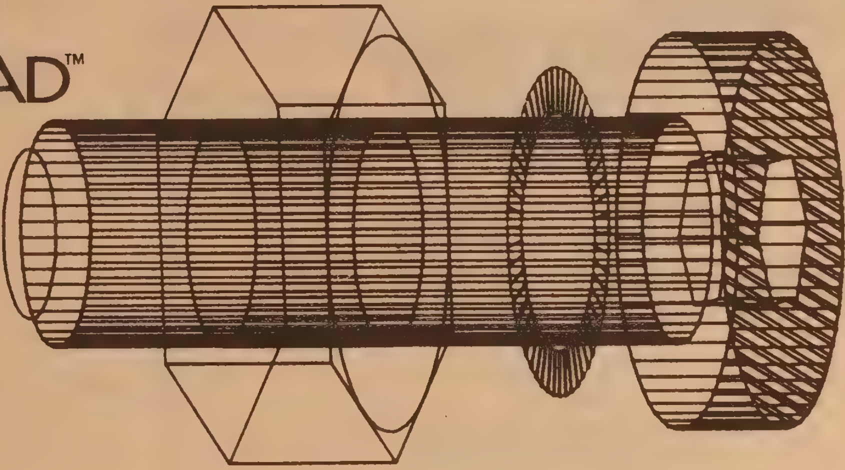

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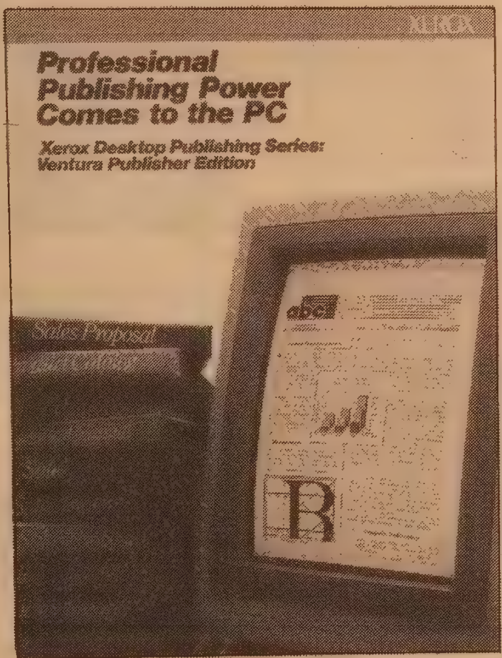
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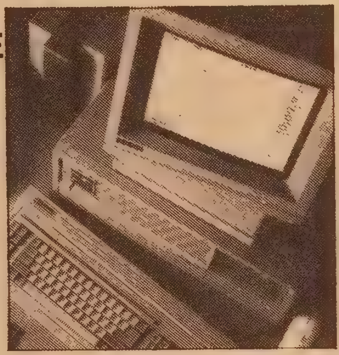

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> **"Everything can be a file server—you don't need to designate a single spot where everything is stored. TOPS can have distributed storage around the net, so that the person who's most strongly associated with a certain kind of information keeps that information on their own hard disk."**

tems it's necessary to inform your computer, basically, who all the other devices in the world are; there's a table somewhere on the net that has the names of all the devices on the net. And that's usually hard to change; it needs a system administrator to change.

In Macintoshese, *TOPS* goes out and dynamically says "Hey! who's there?" and everybody who's there hears that and says "Hi, I'm here, my name is so-and-so, and here's what I am." So I get a list of who's out there, and that's a very clever thing that Apple did.

That, coupled with our distributed file service—namely that everything can be a file server—is a very potent combination, because it really means that you don't need to designate a single spot where everything is stored. It really can have distributed storage around the net, so that the person who's most strongly associated with a certain kind of information typically keeps that information on their own hard disk. Hard disks are so cheap now, the need for a shared hard disk isn't there anymore. What's needed is shared data. So you can keep your data locally on your hard disk, and when other people need it you publish it—which is our metaphor for becoming a file server—and everybody has access to it.

So one of the issues, which is what happens when everybody goes to the same file server at the same time, doesn't happen very often with *TOPS*, because typically it isn't configured that way. It can be, but it isn't necessary; under other systems that are here or soon to be here, it *is* necessary. We think that's a very clear superiority of our product.

The broader question of data security is handled in a couple of ways under *TOPS*, pretty much the way that other networking systems handle it. That is, not as well as one would like.

There are different kinds of data security. There's the kind where you don't want other people to get into your files. That kind of data security we have perfectly. If you don't want anybody to get into your files, you just don't publish them, and they can't get into your files. That's it. And if you want certain people to get into your files and not other people, you put a password on them, and *that's* it.

So it's not a matter of setting permissions like it would be in a UNIX system.

No, it's not as fancy as setting permissions on a UNIX machine. We thought long and hard about it, and we decided that the penalty of keeping all that information on a microcomputer was too great, that it wasn't worth the benefits. But if a microcomputer hooked up to a UNIX machine, it's got it, just the same as if it were between UNIX and UNIX. We've left it in where there was a bigger computer involved; between micros we thought it was too complicated.

What's next?

The company's doing very well. We are clearly the premier selling Macintosh network at the moment. I think we've gone far beyond any of the competition. Our UNIX version is starting to ship now, in every instance co-marketed by the box manufacturer, the UNIX manufacturer or software purveyor that we've done the port for. We will have other operating systems supported by the end of the first quarter.

Our objective in life is to try to connect everything to everything, and there are a few instances where we've actually done it. (Centram, 2560 Ninth Street, Suite 220, Berkeley, CA 94710, 415/549-5900.)

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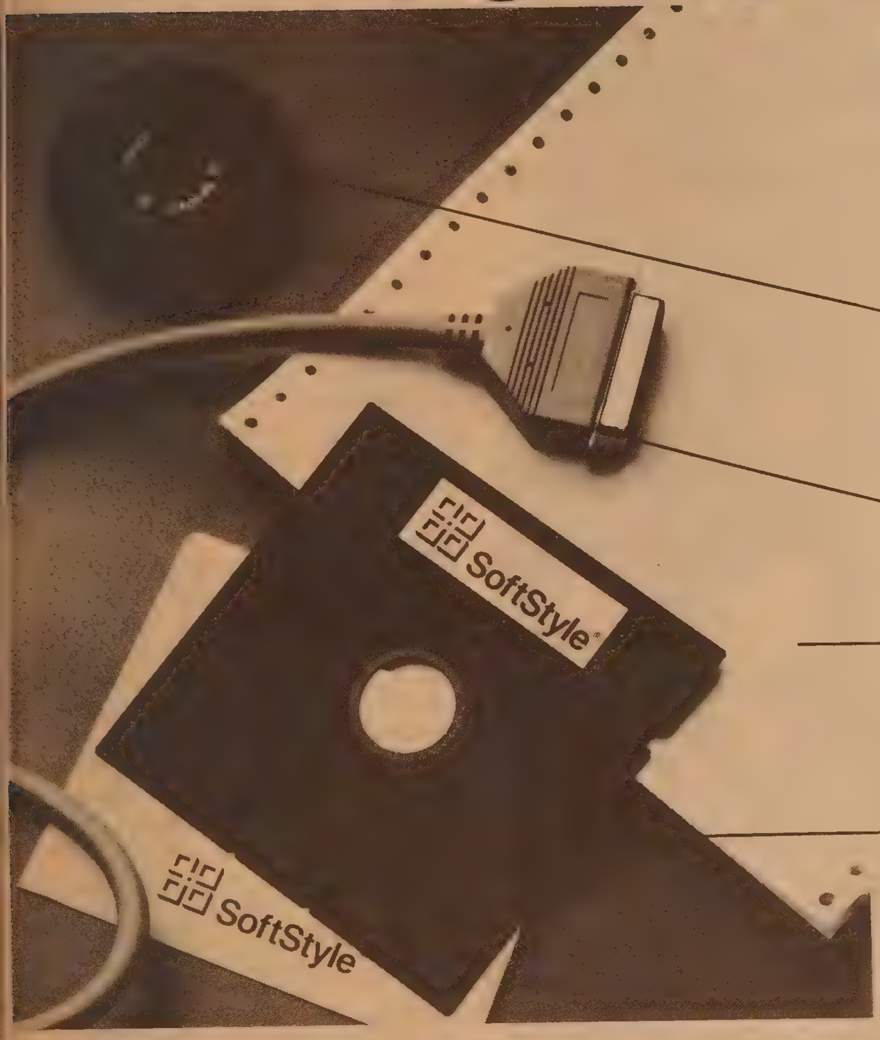

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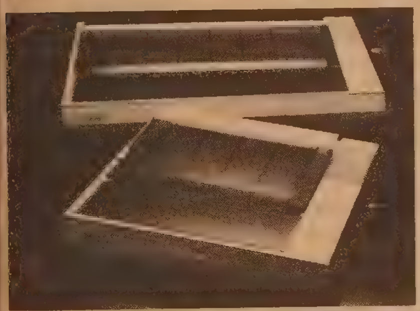

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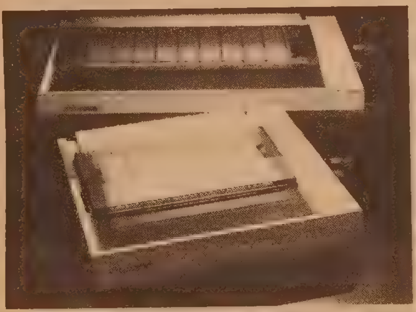

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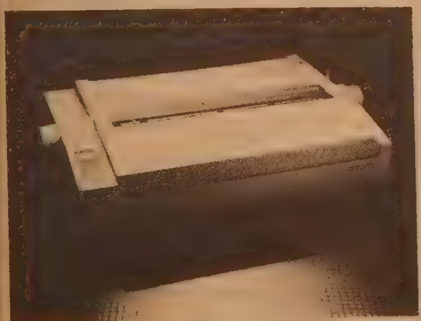

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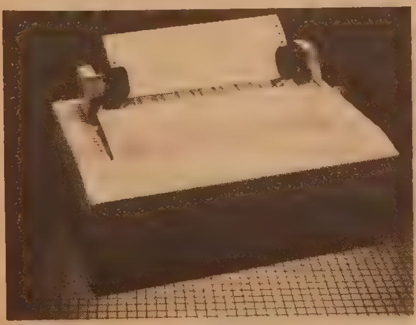

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Come with us now to the lair of Interplay Productions, where creations like The Bard's Tale periodically rise from the murky shadows. . . .

The intrepid crew of Interplay Productions. Front row (l-r): Jay Patel, Troy Miles, president Brian Fargo, Alan Pavlish. Back row: Todd Canasta, vice president Troy Worrell, Bill Heineman.

"This is Dungeons and Dragons on the computer," says Brian Fargo, the 23-year-old president of Interplay Productions. "I mean, this is fantasy role-playing, on a computer, with real graphics and real music."

Fargo is demonstrating the new Amiga version of *The Bard's Tale* from Electronic Arts. The game, originally released in a version for Apple II and subsequently rewritten for other machines, is Interplay's creation. While it's not uncommon for a program to be hastily ported to new machines without much thought being given to exploiting the machines' particular features, such is not the case with Interplay. The Amiga version of *The Bard's Tale* is an impressive demonstration not just of the Amiga's own power but of the ability of clever programmers to make the most of it. Further, Interplay's latest effort, *Bard's Tale II: The Destiny Knight* on the Commodore 64/128, achieves a degree of sophistication and complexity that's incredible on an 8-bit machine.

Interplay consists of eight people, none of whom is older than 25. All of them are enthusiastic devotees of recreational software, and all of them are obsessed with product quality. And, notwithstanding their youth, they're veterans. Says Fargo, "I started right out of high school, with a company called Sabre Software. I used to spend all my time in front of my computer, nearly 16 hours a day. And I used to think, 'I can do better than this!' when I looked at several programs."

So he put his theory to the test. "On my first program, I completed everything myself, from the artwork to the manufacturing, including the copyrighting work. This went on for about a year." Then some Stanford graduate students he knew started a company in Southern California called Boone Company, and made Fargo vice president of product development.

"They sort of put me away in a hole and let me hire two programmers and we just started turning programs out. I was basically doing conversions stuff for K-Tel and other people. This continued for about a year and then the company investors started getting mad at the owners. There was a lot of bad blood, and I decided that that was not what business is all about. It's supposed to be fun, you know. Forget it otherwise.

"So I broke out of there and started Interplay. We started with two of the guys from Boone and began doing conversion work, educational stuff for companies like World Book Encyclopedia. We did work for the military, stuff for McGraw Hill—we did anything we could do. We didn't have the pleasure of creating our own software because we were unproven back then. So, we had to do other peoples' work and just kept our ideas in the back of our minds.

"Finally, we got a break from Activision, after about a year into our new venture. We did two products, *MindShadow* and *Tracer Sanction*. *MindShadow* took off and did real well, and that was when we started rolling off into more things. Finally, we did *Bard's Tale* with Electronic Arts.

"We always wanted to do a fantasy role playing game," says inveterate gamer Fargo. "Of course, we've all played *Wizardry* and thought it was a fantastic product and enjoyed it. But I always thought that more should be done in a lot of areas with the game. *Wizardry* is written in Pascal, which is slow and cumbersome and graphically not very exciting. So we wanted to do better graphics and sound. And being that we could do it in a 6502 computer environment, we've got more flexibility all the way around with the system itself. We always wanted to do a fantasy role-playing game that pushed the system to its limits."

The creation of *The Bard's Tale* involved more than a fondness for sophisticated games, however. Ingenious programming stretched the capabilities of the venerable Apple II and its 6502 chip. The same passion for efficiency is evidenced by the subsequent versions as well. "All programs are in C and Assembly," says Fargo. "All of the programs for the 6502 machines are 100% Assembly. The 8088 machine and 68000 machines are, for the most part, written in C, with Assembly routines for doing some of the high speed graphics, sound, things of that nature."

Further, the type of programming skill that produces works like *The Bard's Tale* is an elusive commodity. "I don't meet a lot of people that are real competent when it comes to programming," says Fargo. "Programming requires a different skill set that you don't necessarily learn in college. A computer science degree is not necessarily the skill set that you need to do this sort of creative work."

Writing and marketing a successful game is a complex undertaking. "We have one guy who's our main programmer," explains Fargo. "He's like our star. Everything centers around him, and he has the main vision of what the product is going to look like. Our star for *Bard's Tale II* happens to be Michael Cranford, who also programmed *Bard's Tale I*. The producer of the game is Electronic Arts, where we have our liaison, and I'm like the director of the program. I coordinate all of the efforts around our programmer, who also has a writer, artists, a sound guy, and a support programmer who does the special routines—a DOS routine, an animation routine. Everything that the company does, we rely on several talented individuals; I know everybody's specialized talents."

The Amiga version of *Bard's Tale* is a veritable tour de force in programming which stretches available resources to the maximum. "We rarely have one sector left on a disk when we're done with a game program," Fargo admits. In this case, Interplay had to deal with the problem of fitting the game on an 800K disk when the graphics code alone was 1.2 megabytes. The graphics code was duly compressed to 600K, leaving Interplay with 200K for the music and program code.

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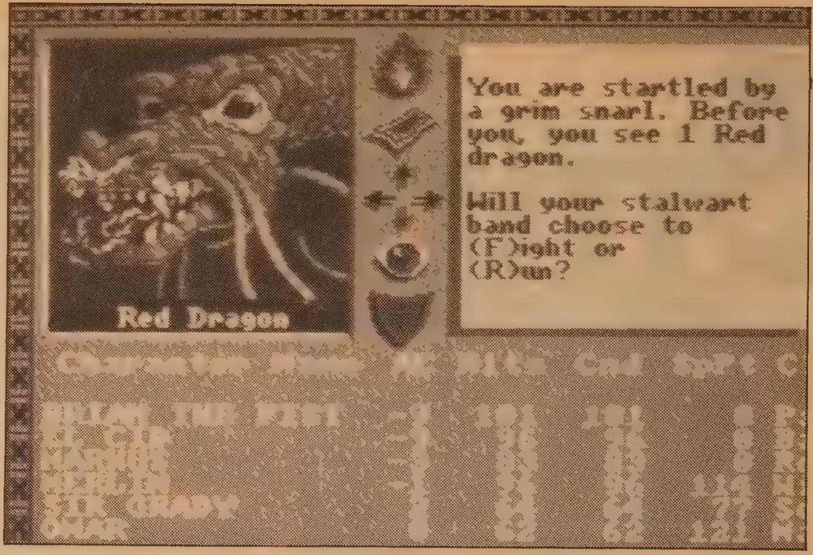
All that code translates into amazing sound and graphics. For example, the Bard himself now plays any of four instruments. When the Bard is playing a harp (animated onscreen to boot), it sounds just like a harp. And should the Bard select a different instrument to play—say a firehorn—the sound is that of a firehorn. "Whenever we do an adaptation of a product to a different machine, we always take full advantage of all of the machine's new features," says Fargo. "There's nothing worse than looking at graphics that look like [8 bit] Apple graphics on a more sophisticated machine. You can see the added detail in this Amiga version—the graphics are phenomenal. The shadows are jumping on the fire and you'll notice that things are differently timed onscreen. The Bard's playing at a different time than the other onscreen activity, plus he's drinking from a tankard. You'll notice that on some systems the onscreen movements all occur at the same time—when an arm is raised, the leg goes up at the same time. With the Amiga, we can use new animation techniques that give us better graphics."

He adds, "We have made this a mouse-intensive product." He clicks the mouse once, and the screen changes instantly from the inn's interior to an outdoor scene.

"Now, let's go to the city. This concept took us eight or nine months of work just to get it right. We think it's OK to take the extra time with a program if it's going to make the product that much better. The care is there, and that's always noticed. We could have done something on the Amiga that would have taken us three months to do, but it would have looked like an [8 bit] Apple product. However, I have to say that the Apple IIGS version looks exactly like this Amiga version..."

The adventuring party heads down the street towards a tavern. As the day gets later and later, the sky begins to turn darker and darker onscreen. Once inside the tavern, we behold an animated dragon's head on the wall.

"See the dragon on the wall? And see that little black dot flying around right above the dragon's nose? Keep an eye on it, watch, it's going to irritate the dragon and then, gulp!" Sure enough, that fly has bothered his last victim. The dragon's mouth partially opens, and the fly is sucked into the beastie's maw, disappearing permanently from the screen. Later on, the party adjourns to a local temple seeking healing for injured party members. Here again, the sound and graphics are excellent. The priests gather to impart their healing graces; their hands move as though casting a spell, and a sort of Gregorian chant fills the room, restoring health to the injured member. Every detail of the game is animated. The adversaries you run into, from the hobbits to the zombies, are all seemingly alive and ready to do battle.



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You are startled by
a grim snarl. Before
you, you see 1 Red
dragon.

Will your stalwart
band choose to
(F)ight or
(R)un?
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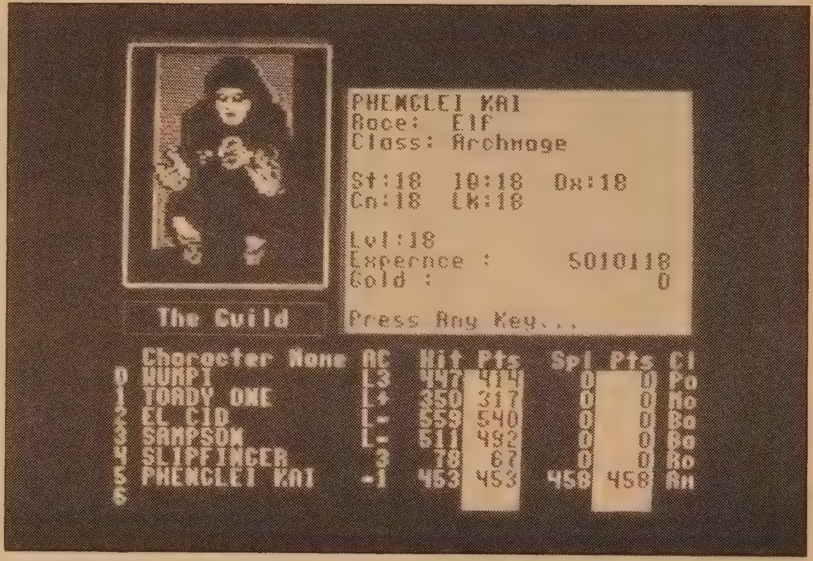

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PHENGLEI KAI
Race:  Elf
Class: Archmage

St:18  IQ:18  Dx:18
Cn:18  Lk:18

Lvl:18
Expernce :       5010118
Gold :                 0

Press Any Key...

  Character Name  AC   Hit Pts   Spl Pts  Cl
0 WUMPI           L3  447  414    0    0  Po
1 TOADY ONE       L+  350  317    0    0  Mo
2 EL CID          L-  559  540    0    0  Ba
3 SAMPSON         L-  511  492    0    0  Ba
4 SLIPFINGER       3   78   67    0    0  Ro
5 PHENGLEI KAI    -1  453  453  458  458  Am
6
```

The game also has speed control with the keyboard and mouse. There's a control panel so that you can just use the mouse without ever using the keyboard at all. The mouse can be used for casting spells, party tagging, playing a Bard's tune, finding out where you are in a game, and setting the scroll speed. Expert players can also use the keyboard for all game activities. There are also several new creatures that won't be found in other versions.

Customer feedback plays an important role in the design of Interplay games. As Fargo is the first to admit, "Sometimes I get so in tune with my own product, playing it, that I sit down and have no problem playing the game. But that's because I know everything about the game. We always listen. We get online and discuss our games on bulletin boards and ask what do the people like, what don't they like, because there is a sort of common consciousness among the people who play these games." Many suggestions from users were incorporated into *The Bard's Tale II*. For instance, Fargo says, "You'll find that in *Bard's Tale II*, it's much easier to get your first level party going."

As he boots up the new game on a Commodore 128, we ask why Interplay chose the Commodore as the first operating environment for the sequel adventure. He answers readily, "The Commodore game market is bigger than the Apple market. And we'd just finished *Bard's I* for the Commodore and had all of our tools still set up. So it was more natural to roll right into the sequel and then create the Apple version afterwards."

The new game shows a complexity quite beyond what we're accustomed to seeing on the Commodore. "Instead of one city, *Bard's Tale II* has six, as well as a complete wilderness that you have to navigate. Instead of 16 dungeon levels, there are now 25 dungeon levels. We crammed all this in a C64, but now there is a boot disk, a character disk and two dungeon disks. Plus, we have much better music this time on the Commodore, because we use two voices instead of one."

And while *Bard's Tale I* took a certain amount of criticism for what some found an excessive dependence on hack-and-slash, *Bard's Tale II* is more complicated and subtle. Says Fargo, "We've got ranged combat. Magicians can appear from 40 feet out. So now, bows have been added as weapons and spells all have ranges. For example, a Dragon Breath spell might be good for only 30 feet. If the magicians are standing 40 feet away, it won't do you much good to cast that spell at them! Now you've got all these different strategies and different methods of how to fight an enemy.

"There's not that much disk swapping involved; there's less than on *Bard's Tale I* for the Commodore. This product is much faster, thanks to some advancements we made on the disk I/O. This product has something called 'real time'—if you hit a snare, the program puts a message on screen that says 'Snare number one, your time is set.' Now you've got just five minutes to complete exiting the snare trap before the entire party gets wiped out! Plus, you cannot pause this game.

"You're also working to solve puzzles. The game takes place around a scepter that was broken into seven pieces, with each piece hidden throughout the kingdom. You'd better find every single piece of the scepter, as each portion has its own magical power. When you finally put all of the pieces together, you become the Destiny Knight. This character will be playable in succeeding versions of our products."

What's in the future for Interplay? "We started another role playing game about a year ago called *Wastelands*, which is a post-nuclear war role playing game. We're creating this one on the Apple, as the Apple market is just as important to me as the Commodore market. Basically, *Wastelands* is a cross between *Ultima* and *Bard's Tale*. The game has combat similar to *Bard's Tale*, but it's got strategy as well. You can actually disband your party. You can split them up so that everyone can wander independently of one another.

"The way this game is set up is different than Bard's Tale. If you wanted to shut off combat, you could, and still have a real good time playing the game. The character interaction is much stronger. And we've also got non-player characters who have personalities. They can even join the party of adventurers. Because you can split up the party, everyone may be wandering around by themselves. Or, something might happen, and you find one of your party is gone. You can toggle between views of different party members, which can be really interesting, because if someone's unconscious at another location, he can't see where he is. What's worse is if he becomes conscious again, and you run a view check on him, and he finds himself in a jail cell. He can't leave the jail, and there may be ten monsters waiting for him outside the bars. Your party has to find him. So now they're running around, trying to find the guy in the lockup. This kind of programming opens up more flexibility in the system. Plus it's post nuclear, sort of a 'Mad Max' kind of thing."

The competence shown in these games portends a new era of computer gaming for computerphiles of all ages. This, along with a genuine concern for user feedback that's parlayed into product improvements, makes it highly probable that Brian Fargo and Interplay will be playing a major role in recreational software for years to come. "We've now been in business for three years, and it's wonderful," says Fargo. The next years may be even better. ☐

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SuperPaint

The Best Of Both Graphics Worlds

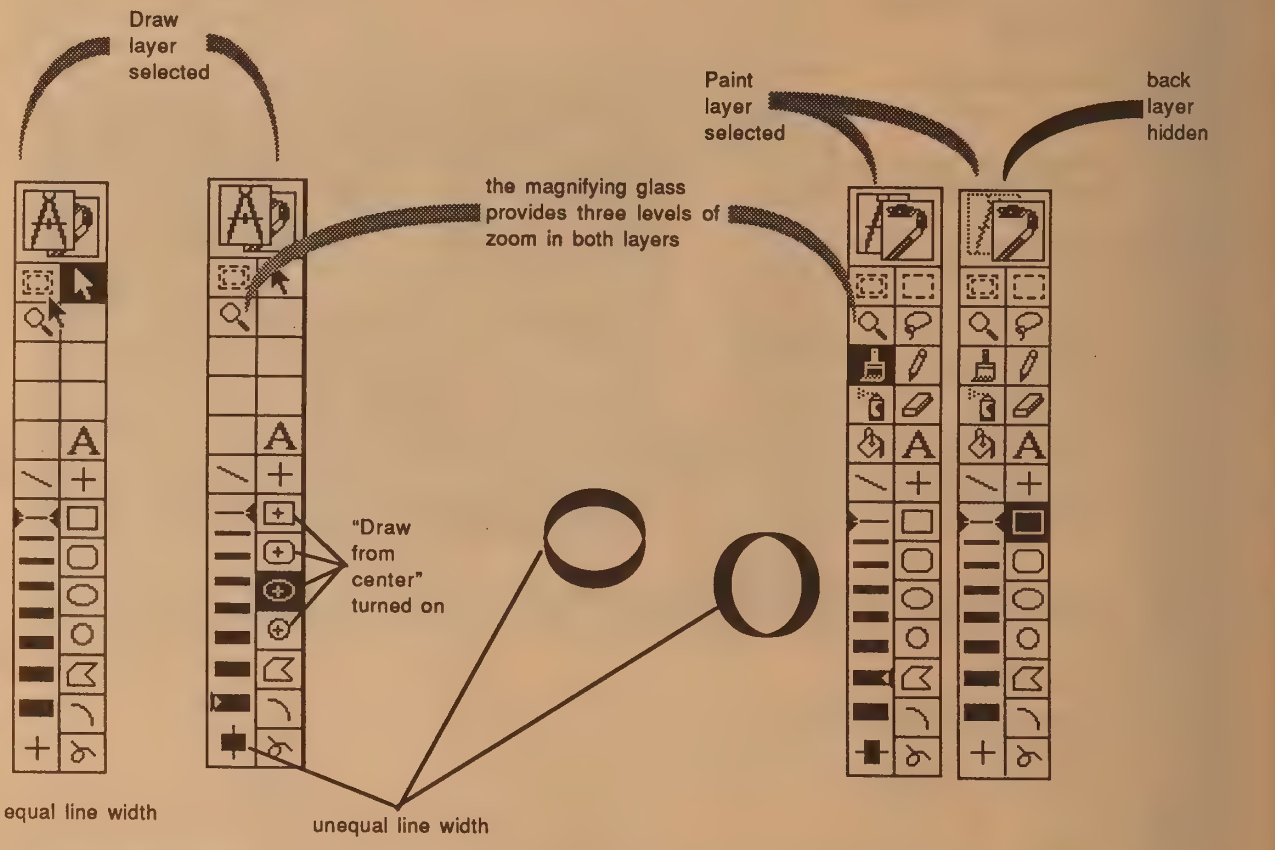
By Bruce A. Fraser

In the beginning was *Macpaint*. *MacPaint* was friendly, fun and surprisingly useful, but it had many shortcomings—a small active window, no rulers, and disappointing LaserWriter output, to say nothing of the fact that you could only work on one document at a time. Given the constraints of the 128K Mac, it was an admirable achievement, but with today's more powerful machines, users want more features and more flexibility in their software. With the release of *SuperPaint* v1.0, Silicon Beach Software has gone a long way towards satisfying those demands.

SuperPaint's list of features reads like every Mac artist's dream, but, as always, there's a catch. *SuperPaint* taxes the 512K Mac to its limits, and serious Mac artists with 512s will probably be queueing up for memory upgrades within a week of getting this program. Fortunately, *SuperPaint* is priced low enough for many users to get the software and the upgrade both.

SuperPaint is more than just a souped-up *MacPaint*. In addition to an extremely full-featured bit-mapped graphics program, it also contains a respectable object-oriented graphics program comprising about 70% of the capabilities of *MacDraw*, all in one elegant package. (See sidebar for an explanation of the difference between bit-mapped and object-oriented graphics.)

SuperPaint integrates these two graphics formats by having two "layers," a Paint layer and a draw layer, which function together like transparent overlays. Moving between the layers is accomplished by clicking on an icon at the top of the tool palette. The paint layer is represented by a paintbrush, the draw layer by a compass. Clicking on the appropriate tool brings that layer to the top and changes the tool palette accordingly. The back, inactive layer can be hidden to avoid confusion between the two layers, and when this is done that layer's icon becomes dimmed.


Draw layer selected
Paint layer selected
back layer hidden
the magnifying glass provides three levels of zoom in both layers
"Draw from center" turned on
equal line width
unequal line width

SuperPaint offers separate tool palettes for Draw and Paint modes

A menu command allows you to copy from the active to the inactive layer. (Anyone who regularly has to paste bit-mapped images into *MacDraw*, only to have them degenerate into several pieces which resist any attempt at being reunited will attest to the value of this feature!) When printing, either layer can be brought to the front. Opaque elements in the front layer will hide elements in the back layer, while transparent elements in the front layer will allow elements underneath them to be seen. Any element in either layer can be opaque or transparent, as you wish.

THE PAINT LAYER

Anyone who has used *MacPaint* will find most of *SuperPaint's* painting tools familiar, but some of the refinements and additions will come as a pleasant surprise. For example, double-clicking on the paintbrush not only brings up the palette of brush tips, but also lets you edit the brush shape, or create your own. Double-clicking on the rectangle, rounded rectangle, oval and circle tools makes a small crosshair appear in the center of their icon. When this feature is active, the point at which you press the mouse button becomes the center of the shape, rather than the corner. This makes it much easier to produce concentric shapes. Double-clicking again toggles these tools back to the usual Paint From Corner mode. (These options are also available from a menu command.)

The line-width palette has a small arrowhead at each end of the line. Clicking on the right of a line will set vertical lines to that width, while clicking on the left sets the width of horizontal lines. If vertical and horizontal lines are set to unequal widths, slanted lines will come in at an intermediate width, and arcs and the borders of ovals will taper. The current selection is indicated by a crosshair at the bottom of the palette.

SuperPaint provides not one, but four pattern palettes. The first is similar to *MacPaint*, two others contain a set of line patterns and grey patterns respectively, and the fourth is left blank to allow you to store your own custom patterns. The Paint menu has a choice of opaque or transparent paint, plus a third item, Paint On Black, which is essentially the inverse of transparent. (Transparent paint lays down only the black dots, while Paint On Black lays down only the white dots.) Used in combination with the large array of available patterns, these features provide easy access to a staggering variety of textures.

Some Draw-like features have been added to the Paint layer. The arc tool is a useful addition that greatly simplifies working with curves. Another useful feature is the ability to set a pattern for lines and borders. Perhaps the most powerful Draw-type feature is the addition of rulers and a grid, complete with a Snap-To-Grid function which makes precise alignment of shapes much easier. (The Grid snap is ignored by the lasso, brush, pencil, spray can, freehand and eraser tools.) Rulers can be set to read in Inches, Centimeters, Picas/Points or Screen dots, and grid increments can be set as small as .05 inches.

Lastly, Rotate, Slant, Distort, Stretch and Perspective menu commands work on marquee selections to provide the effects first popularized by the Click-Art Effects add-on for Mac-

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Bruce Fraser has used a Mac since shortly after they began shipping, and he owns and operates MacRight Associates, a consultancy dedicated to Mac training and problem-solving. He can be reached at (415) 387-2374 (voice) or through MicroTimes.

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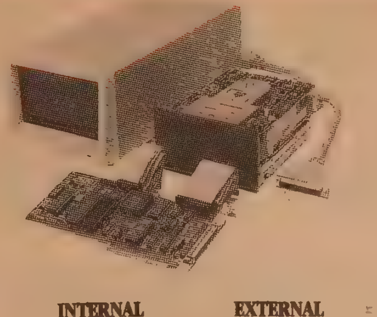

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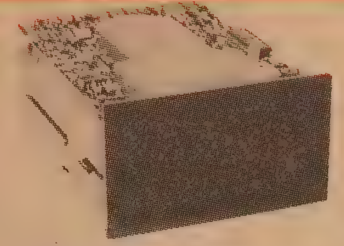

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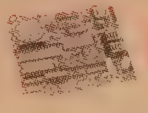

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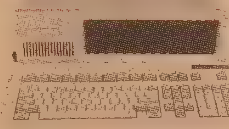

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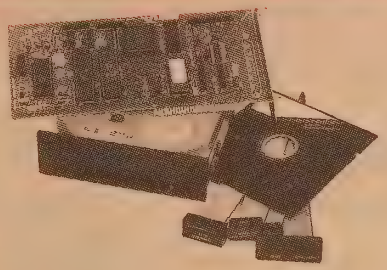

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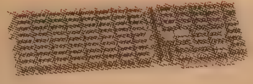

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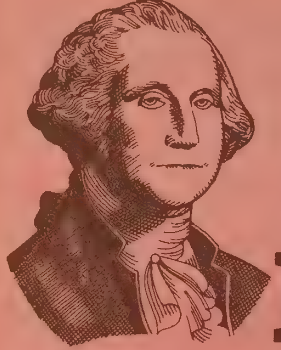

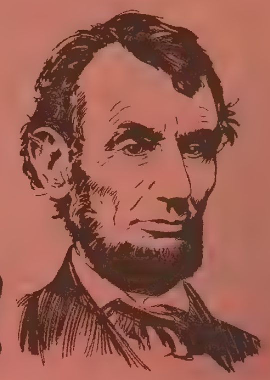

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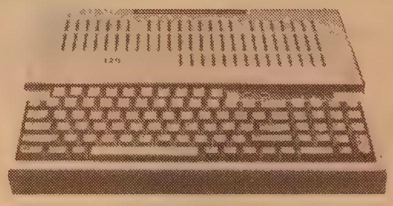

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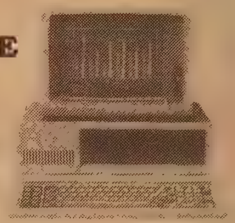

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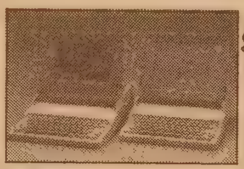

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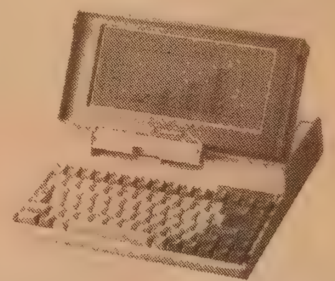

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Paint. A nice touch is that, when using the perspective effect, if you hold down the Shift key while dragging one of the handles, the opposite handle will move the same distance from the center in the opposite direction. This kind of attention to detail is typical of *SuperPaint* and is evidenced by numerous small touches throughout the program.

THE DRAW LAYER

Although the manual states explicitly that SuperPaint is not intended as a replacement for *MacDraw,* the Draw layer of the program is quite powerful in its own right. Indeed, for those users who primarily use the ImageWriter, it surpasses *MacDraw* in some respects. As with the Paint layer, anyone who is comfortable in *MacDraw* will find that much of SuperPaint is already familiar. The shape and arc tools work much the same as in *MacDraw,* with the addition of the Draw From Center option described above. The line width selector and multiple pattern palette features from the Paint layer are also available in Draw.

Familiar Draw features such as Grouping and Ungrouping, Locking and Unlocking, and Aligning Objects are all present, as are Send To Back and Bring To Front. Text objects are handled somewhat differently from *MacDraw. MacDraw's* annoying font limitations have been done away with here, and fonts can be scaled to any size from 4 to 127 point. LaserWriter fonts will print well on the LaserWriter at any size, but ImageWriter fonts look strange when scaled to a size which isn't installed in the system. (This is true of any graphics program for the Macintosh, not just SuperPaint.)

Text objects can be either fixed or expanding. With fixed text objects you set both the height and width. Text will attempt to format itself to fit in the object. Any text left over will be stored in the object, but will not display or print. With expanding text objects you set the width, and the object sizes itself to contain all the text. Fixed objects can be converted to expanding and vice versa by clicking on an indicator which appears when the object is selected.

Some *MacDraw* features are missing from *SuperPaint.* Text objects cannot currently be rotated in *SuperPaint,* nor can "painted" objects (i.e. objects imported from the Paint layer). *SuperPaint* also lacks the ability to smooth polygons, and smoothed polygons imported from *MacDraw* will not retain their smoothing. *SuperPaint* will not create multi-page documents.

There are also some features which currently will only work on the ImageWriter, not on the LaserWriter. On the ImageWriter, objects in the Draw layer can be either transparent or opaque. On the LaserWriter objects will always print opaque, unless they are "painted" objects imported from the Paint layer. Also, on the ImageWriter you can create patterned text in either layer. The LaserWriter will only print patterned text created in the Paint layer, and this will print as a bitmap rather than as a PostScript font. It is these shortcomings which prevent *SuperPaint* from being a replacement for *MacDraw.* However, this does not detract from a great paint program, and Silicon Beach Software has stated its intention to add many new features to the Draw component of the program in its next release.

FEATURES COMMON TO BOTH LAYERS

SuperPaint allows you to work with multiple windows open at once. The actual number of windows available depends on the amount of memory you have available and the complexity of the document. On a 512K Mac, you can open two windows at once, but if you try to use any other software which takes more than 25K of memory, such as RAMdisks, RAM caches, Hyperdrive System software, *Tempo,* etc., you will get a message informing you that *SuperPaint* has insufficient memory to run. On a MacPlus, you can have up to seven windows open at once, depending on the complexity of the documents. On my two-megabyte monster, I have had fifteen windows open simultaneously, at which point my memory gave out. (The memory in my head, that is, not in my Mac!) Under Switcher, the minimum memory size is 430K, which will allow you to have only one window open. With the preferred memory size, 614K, you can open up to four windows at a time. The tools, pattern palettes and menu bar can all be hidden, allowing you to work with the full Macintosh screen in either layer. All tools including the lasso scroll automatically in either layer. This feature can be disabled by a menu command. Holding down the spacebar with any tool (Command-spacebar with the text tool) turns the cursor into a grabber hand for moving around the document.

SuperPaint can open and save documents in *MacPaint* and PICT format, as well as *SuperPaint* format, which contains both bit-map and object-oriented information. Additionally, *SuperPaint* can open and create startup screens. (A startup screen is basically a *MacPaint* document entitled Startup Screen which is installed in the system folder. The usual "Welcome to Macintosh" screen is one example, but many software packages, notably games, have custom startup screens.) Color printing on the ImageWriter II is fully supported by *SuperPaint.*

LASERBITS

LaserBits is just what it sounds like—FatBits at LaserWriter resolution, 300 dots per inch. The mechanism by which this is carried out is ingenious. First, select the area of the Paint layer which you wish to edit. Next, choose New LaserBits from the File menu. *SuperPaint* will then present you

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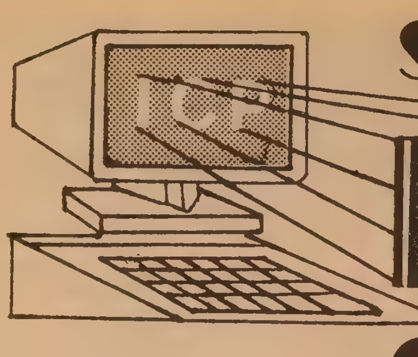

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with the standard Save As... dialog box asking for a name under which to save the LaserBits document. Your selection is saved as a *SuperPaint* document, enlarged by a factor of four.

Each LaserBits document is limited to a two-inch by two-and-a-half-inch area, since it has to fit into *SuperPaint's* eight-by-ten inch image area after it has been enlarged. Editing the document is just like working with FatBits, and on screen it will look like a regular bitmap, but when printed on the LaserWriter each dot will be one-three-hundredth of an inch, and the results are spectacular. While you can only have one LaserBits document open at a time, there is no limit to the number of LaserBits objects a document may contain. *SuperPaint* remembers the link between the LaserBits document and the document which contains it. The only constraint is that when you come to print a document containing LaserBits objects, the LaserBits document(s) must be on disk and available.

Alternatively, if you work with other applications which support PICT format, such as *PageMaker*, you can simply save the *SuperPaint* document containing the LaserBits object as a PICT document. This PICT document will then contain the LaserBits information. You can also use the clipboard to transfer LaserBits objects to other applications such as *MacWrite*. However, this will take quite a while, and the clipboard file which results will be quite large, so be sure you have plenty of disk space available before you try it. I should mention here that if you try to print a LaserBits document, it will simply print as a regular *SuperPaint* document. To enjoy the benefit of the LaserBits effect, you must print the document in which the LaserBits object has been placed. Although this may sound confusing, it is quite easy and intuitive in practice.

IN CONCLUSION...

SuperPaint is by far the most complete Paint program available for the Mac, quite apart from its other capabilities. Although it is packed with features, the interface is elegant, uncluttered and altogether Mac-like. When working with multiple complex documents, some loss of speed is apparent, but this never becomes unacceptable. In using *SuperPaint* with a wide variety of applications, the only incompatibility I have discovered occurs in attempting to open PICT documents created with *Cricket Graph*—trying to open them hangs the Mac, while importing them via the clipboard causes a bomb. Opening the same documents with *MacDraw* and saving them as PICT format seems to take care of the problem. I talked to Charlie Jackson, president of Silicon Beach, and he advised me that although they had only recently become aware of the problem, they were working on a fix. With this sole exception, *SuperPaint* has been completely trouble-free. Although I have tried to cover *SuperPaint's* main features in this review, there are simply too many to mention. At $99 list, *SuperPaint* is exceptionally good value for money, and few Mac users should be without it. (SuperPaint, Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956.)

MACINTOSH GRAPHICS FORMATS

There are generally two quite different ways for computers to handle graphics: bitmapped graphics, where the computer remembers whether each screen dot, or pixel, is black or white, and object-oriented graphics, where the computer stores "objects" such as lines, circles and fill patterns. Each approach has its strengths and weaknesses. On the Mac, we usually refer to programs which produce bitmaps as "paint" programs and those which use object-oriented graphics as "draw" programs. The PICT format is a standard format for object-oriented graphics which has been adopted by many Macintosh programs, including *MacDraw*, Microsoft *Chart*, *Excel* and others.

The major limitation of paint programs is the output resolution. Because paint programs remember screen dots, they are limited to a resolution of 72 dots per inch (d.p.i.), whether you print on an ImageWriter, a LaserWriter or a PostScript digital typesetter such as the Linotronic series. Scanners also produce bitmaps, although some scanners such as the Abaton and Microtek will produce 300 d.p.i. bitmaps. Although output from these scanners will look better when printed on the LaserWriter than *MacPaint* documents, their output resolution is still fixed. A bitmap is a collection of dots, of whatever size.

Draw programs, on the other hand, remember "objects," and generally they will print at the maximum resolution offered by the printer. Objects can be "stacked" on top of each other, and the program will remember the stacking order, unlike paint programs. However, while draw programs are excellent in applications such as charts and diagrams, they are virtually useless when it comes to producing naturalistic art, so paint programs are also necessary in many situations. *SuperPaint* is exceptional in its ability to freely mix bitmapped and object-oriented images.

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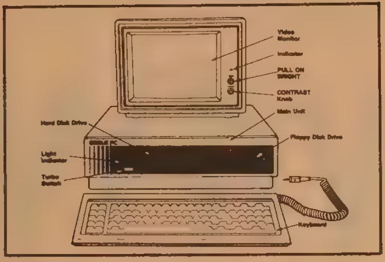

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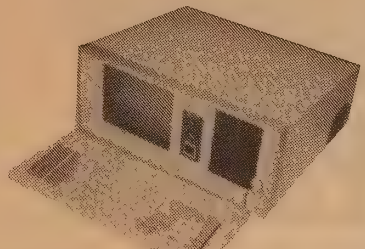

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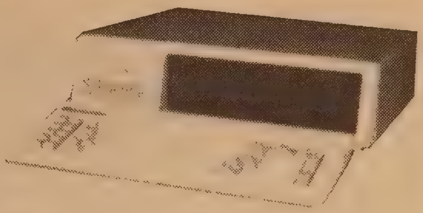

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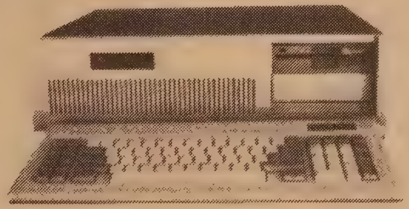

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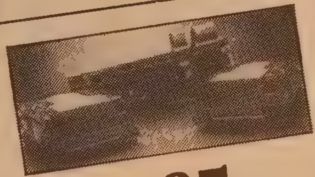

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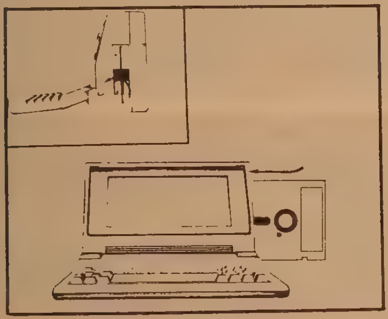

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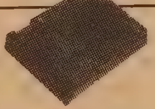
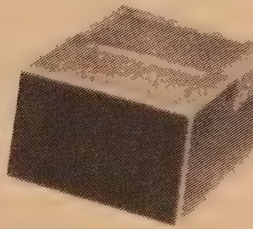


FLOPPY DRIVES FOR APPLE



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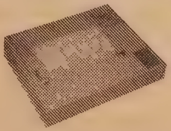

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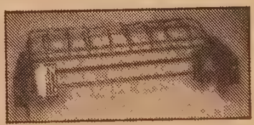

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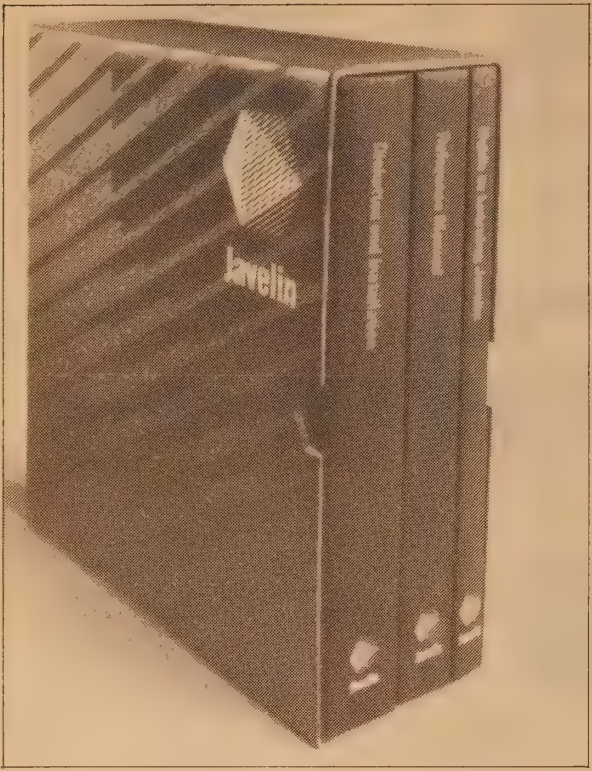


JAVELIN

Now this powerful financial package is within the reach of the home and small business user

By Birrell Walsh

Javelin, a business finance product for IBM compatibles, has attracted considerable attention and generated a number of favorable reviews. At $695 a copy, however, it was not for us small business or home users. We read the rave reviews, wished we could afford it, and went back to our copy of *VP Planner*, the $99 *Lotus 1-2-3* clone.

Things have changed. Javelin recently decided on a bold marketing move—they slashed their price for the next ten thousand copies from $695 to $99.95; after January 15, 1987 the price goes to $199.95 list, still a bargain. There was sound reasoning behind this move—they calculated that no businessperson could resist the price. They also calculated that people who tried *Javelin* would get hooked, stay with it, and spread the word.

They may be right. *Javelin* is addictive, and a very powerful tool for handling money.

IT'S NOT A SPREADSHEET, IT'S NOT A DATABASE...

Early reviews of *Javelin* all agreed that it was powerful. They also all called it difficult to describe. It was not a spreadsheet, they said, nor a database, nor an accounting program, though it had elements of all of those. It was like nothing but itself.

Having *Javelin* is like having a small staff which meets with you about your finances. This staff maintains a database of financial information. Each staff member has a specialty, but they all share all their information among themselves.

The "staff" is *Javelin*'s collection of "views," which are not just ways of looking at financial data—they are also ways of changing information.

Confused? Well, so were we when we read about it. However, we found that *Javelin* was easy to understand once we got our hands on it. Using our household and small businesses as an example, let us give you a tour of *Javelin*.

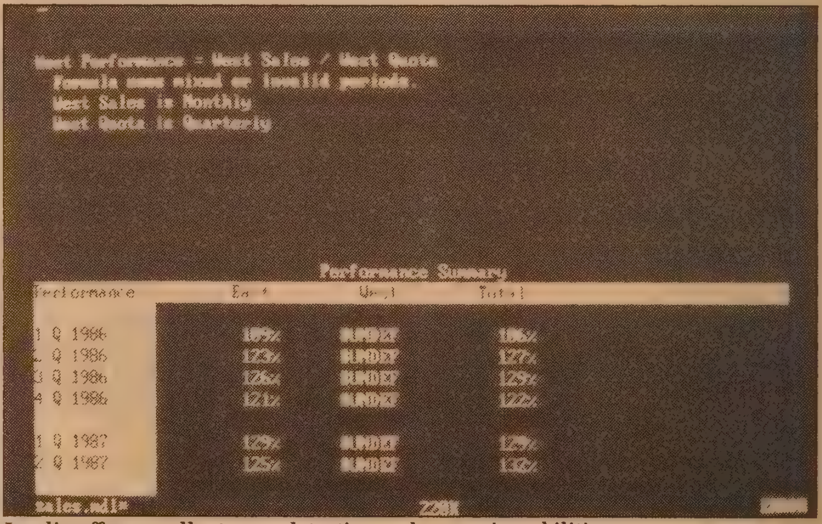
A PRACTICAL EXAMPLE

We usually start a financial plan by writing down a few formulas. In a spreadsheet application, you would probably write that formula on a piece of paper, then translate it into rows and columns before approaching your computer.

Not so in *Javelin*. While spreadsheets are organized around rows and columns, *Javelin* is organized around descriptive formulas that you write: "**Annual Savings = Annual Incomes − Annual Expenses**." *Javelin* lets you write this formula on the edit line. We noticed immediately that *Javelin*, unlike most programs, allows multi-word variable names. In fact, these words can be in any order and the letters can be in any combination of upper and lower case: "Annual Expenses" is the same as "Expenses Annual" or "annual expenses."

One window on *Javelin*'s initial screen is labeled "Diagram View." The diagram view is one of *Javelin*'s most useful features. After we entered the formula on the edit line and hit return, a diagram appeared in the "diagram view" window.

```
Annual Incomes------
     --->> Annual Savings
Annual Expenses------
```



```
West Performance = West Sales / West Quota
  Formula uses mixed or invalid periods.
  West Sales is Monthly
  West Quota is Quarterly

                              Performance Summary
Performance          East        West        Total

1 Q 1986             109%        UNDEF       106%
2 Q 1986             123%        UNDEF       127%
3 Q 1986             126%        UNDEF       129%
4 Q 1986             121%        UNDEF       122%

1 Q 1987             129%        UNDEF       129%
2 Q 1987             125%        UNDEF       132%
sales.mdl*                     22%
```

Javelin offers excellent error detection and correction abilities. Here, Javelin is pointing out the inconsistency between quarterly quotas and monthly sales figures.

No matter how complicated our formulas got, the diagram view always showed what depended on what. This is one of the three "views" in *Javelin* that make it easy to keep track of dependencies and relationships in formulas. The other two are the "Formula View," which shows all the formulas you have written; and the "Error View," which lists all the unresolved formulas and undefined variables.

In this first step, *Javelin* showed the attitude built into its construction. *Javelin* is always clear about what is known and what is not. If you have ever spent hours trying to find a mistake in a spreadsheet, you will appreciate *Javelin*'s presentation of relationships.

We wrote more formulas: "**Monthly Expenses = Rent + Groceries + Parties.**" "**Annual Expenses = Tsum (Monthly Expenses).**" "Tsum" is *Javelin*'s function for summing an item over time. *Javelin* is unique in its dealing with time—it assumes that any variable has values over time. It acts on that assumption by offering drop-down menus that allow the user to set the time period. One can choose to make the time period days, weeks, months, quarters or years. We chose to make a month the default setting for the "model" (*Javelin*'s name for its databases), with a start in January 1987 and an end the following December. As soon as we did that, a "table view" appeared in the lower half of the screen.

This table had labeled blank spaces for the variable from January 1987 on. We could use this table to view or enter the monthly data. We entered the data for our rent, groceries and parties. When we had defined those figures, *Javelin* had all the information it needed to calculate monthly expenses. One tap on the recalculate key, and we had them. Then we decided to look at the rent.

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Norrell PC	4.7/8	8
IBM-AT	6	

Sieve of Erathosthenes

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IBM-XT	3.68	1.10
Norrell PC	1.54	.65
IBM-AT	1.49	

Norton S.I. Rating

	no card	w/ card
IBM-XT	1.0	7.1
Norrell PC	4.2	11.5
IBM-AT	5.7	

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2545 W. 237th St., Suite G, Torrance, CA 90505 (213) 326-7210 groceries, parties and total expenses in *Javelin*'s "Chart View." With the cursor on the item we wanted to see graphed, we set the other window to chart view. There it was: a chart of the variable. *Javelin* looked in its database to find the period we had chosen for the variable, and used it as the period for its chart. With the "sync" button on, it tracked with us on the diagram. We skipped along the diagram, looking at the ups and downs of our expenses for the year.

Javelin is difficult to describe because it is a kit-bag of many different tools. Most of them are available in other programs, but separately. One such feature is the "note view"—it is like the RAM-resident programs which allow you to attach explanatory notes to a spreadsheet or document. In the notes view, you can keep a special note or explanation of any variable. We took a moment in filling out our rent table to note that the rent figure for the latter part of the year is an estimate.

We found ourselves with expenses defined, half of the job done. We needed to define our incomes as well: "**Annual incomes = Tsum (monthly incomes).**" "**Monthly Incomes = His Salary + Her Salary + Business Profits.**" Her salary is paid twice a month; his, every two weeks. In most spreadsheets, the user would take four weeks as "close enough" to the period, or laboriously calculate the number of two-week periods in each month. *Javelin*, ever helpful, lets you define custom periods of time. We defined "fortnight" and told *Javelin* to convert it to months with the expression "**Monthly(His Salary).**"

Each of us has a small business. "Business Profits" was a combination of our separate net profits. We could put all the calculations into this one model; however, *Javelin* made it easy to create, then integrate, separate models for each of our businesses. *Javelin* offers what are called "building blocks"—subprograms that handle major calculations or integrations for you. One such is the "roll up" building block. It is intended to allow a business to combine (for example) sales and costs from many departments or divisions. It can be used just as well for small, one-person businesses.

I write, and my wife is a weaver. Our businesses have very different kinds of expenses and sales. It is convenient to have separate records for the two businesses, and just as necessary to be able to combine summary information about our profits and losses. We made separate models for our two businesses. *Javelin*'s "roll-up" building block let us gather up financial elements from the two models and integrate them into our joint model.

"Roll up" building blocks can integrate many different models into one. Other building blocks allow the user to build lookup tables, curves to graphically describe relationships, and time-delay functions to take into account late payments from purchasers.

All of the main model, so far, occupied about 5K out of the 175K available to the user of a *Javelin* model. The model used very little memory, and only a few of *Javelin*'s abilities.

There are 75 predefined functions in *Javelin*. Some are simple mathematical functions, like MIN() for the minimum value of a set of values. Others are very complex, like the correlation coefficient. There are date and time-period converters, logical functions, dozens of mathematical and statistical calculations, and a number of purely financial forecasters.

Javelin is loaded with features reminiscent of *Reflex*, Borland's acclaimed database. There are drop-down menus with similar commands for all the views. The function keys have a well-made plastic template to remind you of their functions. "Help" appears on F1, as it does in many products. F2 is "edit" as in *Lotus 1-2-3*. Other keys allow the user to jump from window to window, to recalculate the model, to use macros, and to see a quick graph. One key called "Sync" locks the windows together—if the user moves along the diagram from variable to variable with the cursor, the window below shows the appropriate table.

Javelin has so many virtues that its "Worksheet View"—which seems to be a spreadsheet—is a disappointment. It is a disappointment because it is *not* a spreadsheet. Instead, it is another window into the database which *Javelin* keeps. One cannot use it as one can a *Lotus 1-2-3* spreadsheet, for quick scratch calculations and text notes. All the habits that I acquired working with *VP Planner* got in my way as I worked with *Javelin*'s spreadsheet. It's not that *Javelin* is inconsistent, it's just that it handles information differently. In *Javelin*, there are no numbered or lettered rows and columns. Instead, all rows and columns are named after either variables or time periods. No name, no access to the data.

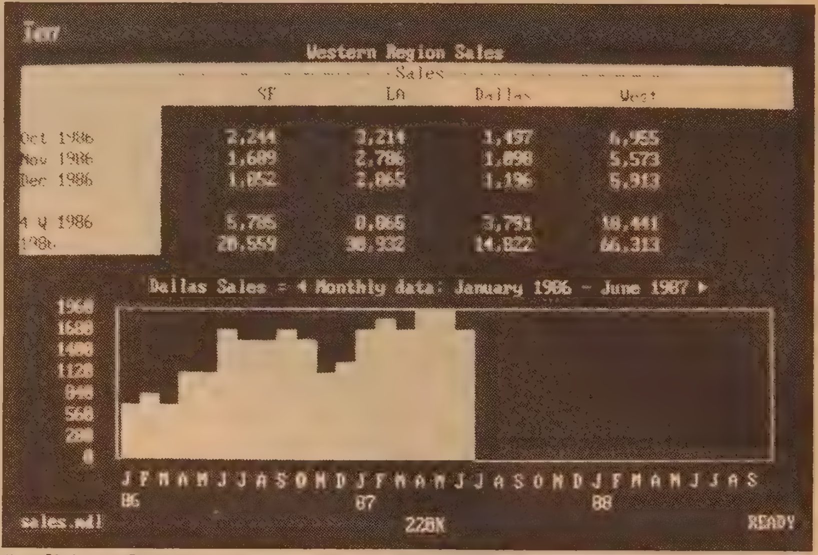
I found that I at least could not figure out how to make *Javelin* into a check reconciler, something anyone could do in a simple spreadsheet. A spreadsheet's rows and columns and sorting facilities lend themselves to making databases. *Javelin* does not handle database manipulations comfortably. This is the negative side of building around formulas, which may also be *Javelin*'s greatest strength. *Javelin* does make it possible to import information from *Lotus 1-2-3* spreadsheets, which can be pressed into service as a database auxiliary.

The measure of any software is its amplification of one's own abilities. We found that *Javelin* let us think about finances more quickly and easily than a spreadsheet could. We could examine our assumptions with the formula, diagram and error views, and debug our work in a very short time. The graphs are quick and relevant. The tutorials are elegant and easy to understand. They walk you through *Javelin* until you have seen most of its features, and are ready to try it on your own. The entire program has a thoughtful and usable interface that lets you work with your information instead of studying a manual.

Is *Javelin* the product for your home finances and small business? It is if you know your finances well enough to describe them in formulas. If you do, *Javelin* can do as much for your home and small business as it has for large corporations who bought the package for $695. It is an extraordinary bargain. (Javelin Corporation, One Kendall Square, Cambridge, MA 02139, 800/JAVELIN.) ☐

Javelin $99.00

Requires: IBM PC, XT or AT or Compatible, 512 or more kilobytes of RAM.



```
                      Western Region Sales
                             Sales
                    SF          LA        Dallas       West
Oct 1986          2,244       3,214       1,497       6,955
Nov 1986          1,689       2,786       1,098       5,573
Dec 1986          1,052       2,065       1,196       5,913

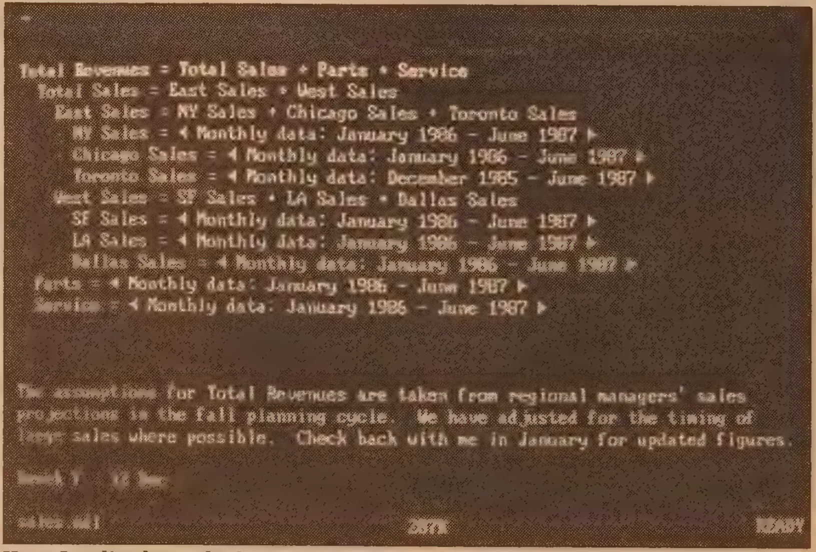
4 Q 1986          5,785       8,065       3,791      18,441
1986             20,559      30,932      14,822      66,313

         Dallas Sales = ◀ Monthly data: January 1986 - June 1987 ▶

sales.mdl                        228K                       READY
```

1960
1680
1400
1120
840
560
280
0
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S
86
87
88

Javelin's multi-view capability allows the user to analyze and compare related information in different contexts and formats.



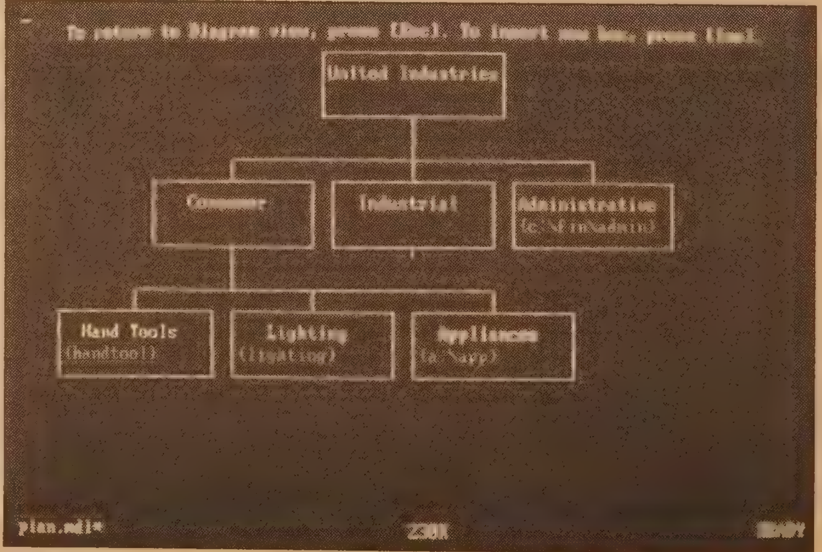
```
Total Revenues = Total Sales + Parts + Service
 Total Sales = East Sales + West Sales
  East Sales = NY Sales + Chicago Sales + Toronto Sales
   NY Sales = ◀ Monthly data: January 1986 - June 1987 ▶
   Chicago Sales = ◀ Monthly data: January 1986 - June 1987 ▶
   Toronto Sales = ◀ Monthly data: December 1985 - June 1987 ▶
  West Sales = SF Sales + LA Sales + Dallas Sales
   SF Sales = ◀ Monthly data: January 1986 - June 1987 ▶
   LA Sales = ◀ Monthly data: January 1986 - June 1987 ▶
   Dallas Sales = ◀ Monthly data: January 1986 - June 1987 ▶
 Parts = ◀ Monthly data: January 1986 - June 1987 ▶
 Service = ◀ Monthly data: January 1986 - June 1987 ▶


The assumptions for Total Revenues are taken from regional managers' sales
projections in the fall planning cycle.  We have adjusted for the timing of
large sales where possible.  Check back with me in January for updated figures.

[illegible]

sales.mdl                        207K                       READY
```

Here, Javelin shows the formulas involved in computing Total Revenues, and displays in a Notes window the assumptions upon which the projections are based.



Javelin lets users consolidate data from several different models in a Rollup Building block.

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Please indicate each of your answers by placing an "X" in the box or writing in on the line provided.

1. Excluding this issue, how many of the last four issues of MicroTimes Magazine have you read?

4 out of 4 ☐ 7-1
3 out of 4 ☐ -2
2 out of 4 ☐ -3
1 out of 4 ☐ -4
0 out of 4 ☐ -5
New Reader ☐ -6
Regular Subscriber ☐ -7

1b. Where did you pick up this issue of MicroTimes?

Computer Store ☐ 8-1
News Rack ☐ -2
Bank ☐ -3
User Group Meeting ☐ -4
School ☐ -5
I subscribe ☐ -6
Office Lobby ☐ -7
got it from a friend ☐ -8
Library ☐ -9
Other Store ☐ -0
mailed direct to you ☐ -x

2a. How many different times did you read or look into the last issue you read?

1-2 ☐ 9-1
3-5 ☐ -2
6-10 ☐ -3
11-15 ☐ -4
16-20 ☐ -5
21+ ☐ -6
This is the 1st issue I've read ☐ -7

b. How long do you keep and refer to an issue of MicroTimes?

1 week or less ☐ 10-1
up to 2 weeks ☐ -2
up to 3 weeks ☐ -3
up to 4 weeks ☐ -4
Save Indefinitely (Reference) ☐ -5

3. How many other people read your copy of MicroTimes?

1-2 ☐ 11-1
3-5 ☐ -2
6-10 ☐ -3
11-15 ☐ -4
16 or more ☐ -5
none ☐ -6

4. Please indicate which of the following sections of MicroTimes you read regularly:

Late Breaking News ☐ 12-1
Reviews ☐ -2
CP/M ☐ -3
Database Mgmt. ☐ -4
Commodore/Amiga ☐ -5
User Group Network ☐ -6
UNIX ☐ -7
Macintosh ☐ -8
Telecommunications ☐ -9
Business Software Reviews ☐ -0
Jan Lewis ☐ -x
I read the advertising ☐ -y

5. How many of the last four issues have you read of the following magazines?

	Never Read	Read 1 out of 4	Read 2 out of 4	Read 3 or 4 out of 4
A+	☐ 13-1	☐ 15-1	☐ 17-1	☐ 19-1
Ahoy	☐ -2	☐ -2	☐ -2	☐ -2
Amiga World	☐ -3	☐ -3	☐ -3	☐ -3
Byte	☐ -4	☐ -4	☐ -4	☐ -4
Compute!	☐ -5	☐ -5	☐ -5	☐ -5
Computer Retail News	☐ -6	☐ -6	☐ -6	☐ -6
Computer Shopper	☐ -7	☐ -7	☐ -7	☐ -7
ComputerWorld	☐ -8	☐ -8	☐ -8	☐ -8
Datamation	☐ -9	☐ -9	☐ -9	☐ -9
Family Computing	☐ -0	☐ -0	☐ -0	☐ -0
Infoworld	☐ -x	☐ -x	☐ -x	☐ -x
Lotus	☐ -y	☐ -y	☐ -y	☐ -y
Mac User	☐ 14-1	☐ 16-1	☐ 18-1	☐ 20-1
Macazine	☐ -2	☐ -2	☐ -2	☐ -2
Macworld	☐ -3	☐ -3	☐ -3	☐ -3
Nibble	☐ -4	☐ -4	☐ -4	☐ -4
PC	☐ -5	☐ -5	☐ -5	☐ -5
PC Week	☐ -6	☐ -6	☐ -6	☐ -6
PC World	☐ -7	☐ -7	☐ -7	☐ -7
Personal Computing	☐ -8	☐ -8	☐ -8	☐ -8
Wall St. Journal	☐ -9	☐ -9	☐ -9	☐ -9
Forbes	☐ -0	☐ -0	☐ -0	☐ -0
Fortune	☐ -x	☐ -x	☐ -x	☐ -x
Business Week	☐ -y	☐ -y	☐ -y	☐ -y

6a. In the last month, which of the following have you read?

Bay Guardian .... ☐ 21-1
East Bay Express .... ☐ -2
L.A. Weekly............. ☐ -3
L.A. Reader............. ☐ -4
Bay Area Business Magazine .... ☐ -5
Metro .... ☐ -6

Computer Currents .... ☐ -7
City Sports .... ☐ -8
SF Focus .... ☐ -9
California Magazine ...... ☐ -0
California Business .... ☐ -x
BAM Magazine .... ☐ -y

b. Of these, which do you read most often? ____________________

And why? ____

____

7a. How many times per week do you read the daily paper?

1 .... ☐ 22-1
2 .... ☐ -2
3 .... ☐ -3
4 .... ☐ -4

5 .... ☐ -5
6 .... ☐ -6
7 .... ☐ -7
Never Read............. ☐ -8

b. Which daily papers do you read?

L.A. Times.............. ☐ 23-1
The Daily News.......... ☐ -2
L.A. Herald Examiner ..... ☐ -3
Orange County Register ... ☐ -4
S.F. Chronicle .... ☐ -5

S.F. Examiner .... ☐ -6
San Jose Mercury .... ☐ -7
Contra Costa Times ...... ☐ -8
Other (specify) ____________ ☐ -9

8a. Please list the 3 radio stations you listen to most often. (In order of most listened to)

1. ____
2. ____
3. ____

b. How much time do you spend listening to radio on an average weekday?

less than 30 minutes ...... ☐ 24-1
up to 60 minutes .... ☐ -2

up to 90 minutes .... ☐ -3
up to 2 hours or more ..... ☐ -4

c. Which of the following best describes your listening habits? (Check as many apply)

I listen to news radio ...... ☐ 25-1
I listen to music radio...... ☐ -2
I listen when I'm in my car .. ☐ -3
I listen when I'm at work ... ☐ -4
I listen when I'm at home... ☐ -5
It's in the background all the time .... ☐ -6

I am loyal to my favorite station................. ☐ -7
I "tune out" all the commercials .... ☐ -8

10. In the last month, how many times did you dine at a restaurant, spending over $30.00 for two?

1-2.................... ☐ 26-1
3-5 .... ☐ -2
6-10................... ☐ -3

11-15.................. ☐ -4
16+ .... ☐ -5
none .... ☐ -6

11. In the past year, how much did you spend on clothing for yourself?

under $750 .... ☐ 27-1
$751-1250.............. ☐ -2
$1251-2000............. ☐ -3

$2001-3000............. ☐ -4
over $3001 .... ☐ -5

12. How many round-trips, by plane, did you take in the last 12 months?

a. for business?

1-3.................... ☐ 28-1
4-8 .... ☐ -2
9-15.................... ☐ -3

16-24.................. ☐ -4
25 or more.............. ☐ -5
I did not fly............. ☐ -6

b. for pleasure?

1-3.................... ☐ 29-1
4-8 .... ☐ -2
9-15.................... ☐ -3

16-24.................. ☐ -4
25 or more.............. ☐ -5
I did not fly............. ☐ -6

13. Which of the following kinds of computer hardware do you own and/or plan to purchase for business or personal use?

Computer Hardware	Company Owns	Plan to Purchase for Company	Own for Personal Use	Plan to Purchase for Personal Use
Mini Computer Office System	☐ 30-1	☐ 32-1	☐ 34-1	☐ 36-1
IBM PC/XT/AT or PC Compatible	☐ -2	☐ -2	☐ -2	☐ -2
IBM PC Portable or compatible	☐ -3	☐ -3	☐ -3	☐ -3
Apple II, II+, IIe, IIc	☐ -4	☐ -4	☐ -4	☐ -4
Apple Macintosh	☐ -5	☐ -5	☐ -5	☐ -5
Apple Macintosh PLUS	☐ -6	☐ -6	☐ -6	☐ -6
Tandy (Radio Shack)	☐ -7	☐ -7	☐ -7	☐ -7
Amiga	☐ -8	☐ -8	☐ -8	☐ -8
Atari ST	☐ -9	☐ -9	☐ -9	☐ -9
Hewlett-Packard	☐ -0	☐ -0	☐ -0	☐ -0
DEC	☐ -x	☐ -x	☐ -x	☐ -x
UNIX Based System	☐ -y	☐ -y	☐ -y	☐ -y
Home System Under $1000	☐ 31-1	☐ 33-1	☐ 35-1	☐ 37-1
Hard Disk	☐ -2	☐ -2	☐ -2	☐ -2
Memory Upgrade	☐ -3	☐ -3	☐ -3	☐ -3
Monitor	☐ -4	☐ -4	☐ -4	☐ -4
Dot Matrix Printer	☐ -5	☐ -5	☐ -5	☐ -5
Daisy Wheel Printer	☐ -6	☐ -6	☐ -6	☐ -6
Laser Printer	☐ -7	☐ -7	☐ -7	☐ -7
Modem	☐ -8	☐ -8	☐ -8	☐ -8
Local Area Networks	☐ -9	☐ -9	☐ -9	☐ -9
MIDI/Music Interface	☐ -0	☐ -0	☐ -0	☐ -0
Memory Add-On Boards	☐ -x	☐ -x	☐ -x	☐ -x
Graphics cards	☐ -y	☐ -y	☐ -y	☐ -y

a. Do you plan to purchase any of the above within the next 90 days?

Yes .... ☐ 38-1
no .... ☐ -2

b. How much did you spend on computer products for your business last year?

under $2,000............ ☐ 39-1
$ 2,001-5,000........... ☐ -2
$ 5,001-10,000.......... ☐ -3
$ 10,001-20,000......... ☐ -4

$ 20,001-40,000......... ☐ -5
$ 40,001-80,000......... ☐ -6
$ 80,001-150,000........ ☐ -7
$150,000 or more .... ☐ -8

c. How much do you plan to spend on your business computing system(s) in the coming year?

under $2,000	☐ 40-1	$ 20,001-40,000	☐ -5
$ 2,001-5,000	☐ -2	$ 40,001-80,000	☐ -6
$ 5,001-10,000	☐ -3	$ 80,001-150,000	☐ -7
$ 10,001-20,000	☐ -4	$150,000 or more	☐ -8

d. When new, what was the value of your home computing system?

under $500	☐ 41-1	$3,501-5,000	☐ -5
$ 501-$1,000	☐ -2	$5,001-7,500	☐ -6
$1,001-2,000	☐ -3	$7,501-10,000	☐ -7
$2,001-3,500	☐ -4	over 10,000	☐ -8

e. How much do you plan to spend on your home computing system in the coming year

under $500	☐ 42-1	$3,501-5,000	☐ -5
$500-$1,000	☐ -2	$5,001-7,500	☐ -6
$1,001-2,000	☐ -3	$7,501-10,000	☐ -7
$2,001-3,500	☐ -4	over $10,000	☐ -8

14a. Of the following software, please indicate whether you own and/or plan to purchase for business or personal use?

Software & Accessories	Business Use	Plan to Purchase for Business	Own for Personal Use	Plan to Purchase for Personal Use
Business Software				
Spreadsheet	☐ 43-1	☐ 45-1	☐ 47-1	☐ 49-1
Word Processing	☐ -2	☐ -2	☐ -2	☐ -2
Database	☐ -3	☐ -3	☐ -3	☐ -3
Accounting	☐ -4	☐ -4	☐ -4	☐ -4
Telecommunications	☐ -5	☐ -5	☐ -5	☐ -5
Project Mgmt	☐ -6	☐ -6	☐ -6	☐ -6
Graph	☐ -7	☐ -7	☐ -7	☐ -7
Drawing	☐ -8	☐ -8	☐ -8	☐ -8
CAD/CAM	☐ -9	☐ -9	☐ -9	☐ -9
Programming Software	☐ -0	☐ -0	☐ -0	☐ -0
Home Use				
Banking/Accounting	☐ -x	☐ -x	☐ -x	☐ -x
Taxes	☐ -y	☐ -y	☐ -y	☐ -y
Cookbook	☐ 44-1	☐ 46-1	☐ 48-1	☐ 50-1
Educational Software	☐ -2	☐ -2	☐ -2	☐ -2
Game Software	☐ -3	☐ -3	☐ -3	☐ -3
Music Software	☐ -4	☐ -4	☐ -4	☐ -4

b. In an average month, how much do you usually spend on blank disks for personal or home use?

under $25	☐ 51-1	$101-200	☐ -4
$26-50	☐ -2	$201-300	☐ -5
$51-100	☐ -3	$301 +	☐ -6

c. In an average month, how much do you usually spend on blank disks for business or professional use?

under $50	☐ 52-1	$751-1250	☐ -5
$50-150	☐ -2	$1251-2000	☐ -6
$151-350	☐ -3	$2000 +	☐ -7
$351-750	☐ -4	none	☐ -8

d. How do you usually buy hardware, software, accessories and supplies?

through local retail store	☐ 53-1	direct from manufacturer	☐ -3
mail order	☐ -2	direct from distributor	☐ -4

15. Are you a member of a user-group?

yes ☐ 54-1 no ☐ -2

If yes, which one? Name ____________________

Address ____________ City ____________

16a. Which of the following items do you personally own and/or plan to purchase in the coming year:

Home Stereo	Own	Plan to Purchase
Cartridge/Stylus	☐ 55-1	☐ 56-1
Turntable	☐ -2	☐ -2
Receiver	☐ -3	☐ -3
AM/FM Tuner	☐ -4	☐ -4
Amp/Pre-Amp	☐ -5	☐ -5
Stereo Cassette Recorder	☐ -6	☐ -6
Portable Stereo	☐ -7	☐ -7
Stereo Reel to Reel	☐ -8	☐ -8
Headphones	☐ -9	☐ -9
Record Cleaning	☐ -0	☐ -0
Compact Disc Player	☐ -x	☐ -x

b. What was the value of your stereo system when it was new?

less than $500	☐ 57-1	$1,501-2,500	☐ -4
$500-1000	☐ -2	$2,501-3,500	☐ -5
$1,001-1,500	☐ -3	over $3,501	☐ -6

c.

Video Equipment	Own	Plan to Purchase
Color Console TV	☐ 58-1	☐ 59-1
Color Portable TV	☐ -2	☐ -2
VHS Cassette Recorder	☐ -3	☐ -3
BETA Cassette Recorder	☐ -4	☐ -4
Laser Disc	☐ -5	☐ -5
Projection TV	☐ -6	☐ -6
Video Camera	☐ -7	☐ -7
35mm Camera	☐ -8	☐ -8
Camera lenses/Accessories	☐ -9	☐ -9

d. What was the value of your video system when new?

under $500	☐ 60-1	$2,001-3,000	☐ -4
$501-1,000	☐ -2	$3,001-4,500	☐ -5
$1,001-2,000	☐ -3	over $4,501	☐ -6

17. Please show how many of the following items you purchased last month:

Audio Cassettes

Blank	1-2	☐ 61-1
	3-6	☐ -2
	7-12	☐ -3
	13-24	☐ -4
	25 +	☐ -5
	none	☐ -6
Pre-Recorded	1-2	☐ 62-1
	3-5	☐ -2
	6-10	☐ -3
	11-15	☐ -4
	16 +	☐ -5
	none	☐ -6

Video Cassettes

Blank	1-2	☐ 63-1
	3-5	☐ -2
	6-10	☐ -3
	10 +	☐ -4
Pre-Recorded	1-2	☐ 64-1
	3-5	☐ -2
	6-10	☐ -3
	10 +	☐ -4

18. Please indicate which of the following you drink or serve regularly, as follows:

	Personally Drink	Serve at Home Regularly
Red Wine	☐ 65-1	☐ 66-1
White Wine	☐ -2	☐ -2
Domestic Beer	☐ -3	☐ -3
Imported Beer	☐ -4	☐ -4
Vodka	☐ -5	☐ -5
Bourbon, Canadian, Rye Whiskey	☐ -6	☐ -6
Scotch	☐ -7	☐ -7
Rum	☐ -8	☐ -8
Gin	☐ -9	☐ -9
Tequila	☐ -0	☐ -0
Pre-Mixed Cocktails	☐ -x	☐ -x
Cordial or Liqueur	☐ -y	☐ -y

19a. Please indicate the total number of vehicles in your family. Count cars, vans and pickup trucks and give a brief description of each, as outlined:

Total Number
of Vehicles Owned ☐ 67-1

	1st Car	2nd Car	3rd Car
Make	______	______	______
Model	______	______	______
Year	______	______	______
b. Purchased:			
New	☐ 68-1	☐ -2	☐ -3
Used	☐ 69-1	☐ -2	☐ -3
Cost	$______	$______	$______

c. If you plan to buy a new car, van or truck in the coming year, how much do you plan to spend?

under $10,000 ☐ 70-1
$10,001-15,000 ☐ -2
$15,001-20,000 ☐ -3
$20,001-30,000 ☐ -4
over $30,000 ☐ -5
not planning to buy ☐ -6

d. What are you planning to buy?

American ☐ 71-1
German ☐ -2
Japanese ☐ -3
British ☐ -4
Italian ☐ -5
French ☐ -6
Other (specify) ______ ☐ -7

20. Are you male or female?

Male ☐ 72-1
Female ☐ -2

21. How old are you?

Under 12 ☐ 73-1
12-17 ☐ -2
18-20 ☐ -3
21-24 ☐ -4
25-29 ☐ -5
30-34 ☐ -6
35-39 ☐ -7
40-44 ☐ -8
45-49 ☐ -9
50-54 ☐ -0
55-64 ☐ -x
over 65 ☐ -y

22. What is your marital status?

Single ☐ 74-1
Married ☐ -2
Divorced/Separated ☐ -3
Widowed ☐ -4

23a. Please describe your employment status:

Full-time ☐ 75-1
Part-time ☐ -2
Unemployed ☐ -3
Retired ☐ -4

b. Of the following, which best describes the type of work you do?

Medical ☐ 76-1
Legal ☐ -2
Architect ☐ -3
Finance/Insurance ☐ -4
Government ☐ -5
Industrial/Manufacturing ☐ -6
Education ☐ -7
Retail Sales ☐ -8
Marketing/Sales ☐ -9
Programming ☐ -0
Graphic Arts ☐ -x
Industrial Design ☐ -y

c. And which of the following best describes your position in the company?

Title

President/CEO/Owner ☐ 77-1
VP-Marketing/Sales/Advertising ☐ -2
VP-Engineering/Product Development ☐ -3
VP-Business/Finance/Controller ☐ -4
Purchasing Agent ☐ -5
Dept Head/Middle Management ☐ -6
Salesperson ☐ -7
Personnel/Human Resources ☐ -8
Educator ☐ -9
Clerical/Administrative Asst. ☐ -0
Skilled Laborer ☐ -x
Unskilled Laborer ☐ -y

24. What is the highest level you completed in school? (Choose 1 only)

Some High School or less ☐ 78-1
High School Graduate ☐ -2
Attended 1-3 Years College ☐ -3
College Graduate ☐ -4
Graduate Degree ☐ -5

25. Counting you and all members of your household, what was your total income, before taxes, in 1986?

Less than $5,000 ☐ 79-1
$ 5,000-$9,999 ☐ -2
$10,000-$14,999 ☐ -3
$15,000-$19,999 ☐ -4
$20,000-$29,999 ☐ -5
$30,000-$39,999 ☐ -6
$40,000-$49,999 ☐ -7
$50,000-$69,999 ☐ -8
$70,000-$89,999 ☐ -9
$90,000-$119,999 ☐ -0
$120,000 + ☐ -x

26. If you would like to be able to get your copy of MicroTimes at a location that would be more convenient for you, which of the following would be best for you?

Computer or Software Store ☐ 80-1
Street Rack ☐ -2
corner of ______ and ______
city ______
Bank ☐ -3
Name ______
User Group ☐ -4
Name ______
School ☐ -5
Name ______
Office Lobby or Cafeteria ☐ -6
Company Name ______
Restaurant ☐ -7
Name ______
Convenience Stores, like 7/11 ☐ -8
Name ______
Office Supply Store ☐ -9
Name ______
Other location ☐ -0
Name ______

address ______
city ______

27. What is your Zip code? _ _ _ _ _

If you would like to enter the contest for a chance to WIN a Gift Certificate for your choice of $500 in software, fill in the entry blank below. Thank you and GOOD LUCK!

Name ______ Phone ______
Address ______ Apt. No. ______
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Mail your completed survey, postmarked no later than March 10, 1987 to:

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UNIX

Downloading Files From USENET

By Bennett Falk

HLR of Mill Valley writes: "How can I download files from USENET?"

Now HLR is really a very bright guy and probably knows perfectly well how to download files from USENET to a personal computer, but this column will answer the question anyway because a) I'm flattered that he asked, and b) downloading files from USENET is interesting stuff and not very well documented.

WHAT IS USENET ANYWAY?

Imagine an immense international network of computers, most running UNIX, which call each other over ordinary phone lines and serial communications ports at pre-determined times of day and exchange files. That's USENET. Much of the traffic on the net consists of private user-to-user communications in the form of electronic mail, but also flowing through the net is a very great volume of information for public consumption. If the computer you're working on happens to be a node on the network, or if you have an account on a commercial time-sharing system that's part of the network, you have access to one of the greatest public sources of information and opinion in any culture anywhere: the network news.

The network news is basically an organic encyclopedia. News topics range from technical esoterica (like compiler design) to more mundane matters (like restaurant reviews), with detours through every conceivable area of interest in between.

The network news is easy enough to read: just type "**readnews**" and press return in response to the UNIX shell prompt, and you'll be reading the network news. You may be lucky enough to work on a system with a more modern program for reading the news ("**rn**" is a current favorite), but "**readnews**" should be available on any network node.

WHAT'S SO TROUBLESOME ABOUT DOWNLOADS?

Some of the newsgroups on the net are used to distribute public domain software and "shareware," and it's not uncommon to find source code and software postings mixed in among other items for discussion in these groups. These software postings may have been massaged in one way or another to make them congenial to "readnews." Usually this means that things posted to the net are ASCII representations of some kind.

Suitably encoded, however, software postings can be displayed on the screen just like other articles in the newsgroup. They may not make much sense in their prose form, but neither do they disrupt a quiet browsing through the network news.

Anyone wishing to use this software will not only have to download the appropriate files, but also take precautions to "decode" them in some way. Hence HLR's question on the sometimes thorny matter of decoding files from USENET.

WHAT YOU WILL ENCOUNTER

While reading the network news, you may run across something worth downloading. First, save the desired article in a UNIX file with the "**s**" command at the readnews "**ynq**" prompt. You'll have to specify a filename on the command line: "**s kernel.c**" for example. (One exception to this procedure will be discussed below.)

After you exit **readnews**, look at the files you have created, preferably with an editor. You will see that messages sent through USENET usually include some notes from the author describing the posting and including instructions for filtering it into some usable form. Typically this information is at the top of the file, right after a header that describes the message's routing through USENET, and both the routing information and the author's notes are saved as part of the posting.

Depending on what format was used for the posting, you may need to do some further processing to produce something that can be meaningfully downloaded. Articles posted on USENET may be in any of five formats:

1. **ascii**
2. **shar**
3. **uuencode**
4. **ARC**
5. **compress**

"**Ascii**" files are nothing but plain text files. They aren't encoded at all, and just about any editor (either on the UNIX system you use to read the news or on your local computer) can be used to modify them. At some point you will probably need to strip out the USENET message header to make the file usable.

In general, **ascii** software postings are simple source code files. The languages preferred on USENET seem to be C and Pascal. One caution: source code on the network is usually intended

A sample USENET message containing an archive file (.arc) that has been uuencoded for posting:

```
Article 541 of comp.sys.atari.st:
Path: well!ptsfa!lll-lcc!seismo!husc6!mit-eddie!genrad!decvax!ucbvax!ESTEC.BITNE
    T!TPC862
From: TPC862@ESTEC.BITNET
Newsgroups: comp.sys.atari.st
Subject: Public Domain Make (part 2 of 2)
Message-ID: <8612221910.AA11047@ucbvax.Berkeley.EDU>
Date: 22 Dec 86 03:16:08 GMT
Sender: daemon@ucbvax.BERKELEY.EDU
Organization: The ARPA Internet
Lines: 1284
```

Note to the info-atari16 editor: You might want to split this file because it is rather large (about 1270 lines)

```
begin 777 stmake.arc
M&@A!4U1!5"Y(        ,P$   (X-Q+"^1Q8"      ,"5ZH@   2#   2P,%"50D@&1   x
MQ<&$("   1"#.'3A@Z+M"   :)%   2ADZ<MZ824,'!(\Y>>:\J'@QHX\$"1\J3&#Fx
MC1P0=-"4  1'$HIPT(*90   =$FS!@T:=R4F1,3H4*&#IU&)*#$A107((2$:=,Fx
MS<<"41,N;/B0RT  8+PX>'$&FS$BE.-.T*?.%3@(V;]R<4:N@HIPZ8TI*9$GGx
MX)Z#4X^&N3F8SI<Y<&)LD1&CRXZ    *D    HJ>-F340$*M(J2(QF\=2*7]J\:7M9x
M(   @C:=CLO   @RC9@Z=):""(U8(AVY=$N"0*V:3.O,35;'G<L"Q)V==>;LS+F3x
MS,6=)I;/G@,B!@B\>G>+G@K^S&G'<]+H*7/\=>R=Z=='/,![M$3%C   F@ABQCx
M2PP:EF'FGFP@N+'53I#0)UH?.QP$&@A#2$5#2RY#         A  8  (\-7+%5x
M   :,,      ,"5ZH@/2#2P,%"50D@(1      Q<&$($!   (=(DR)(B+$   $H1-&3AH04ZB    x
ML%-&SIPT;]PL+.       0H4*&+2%J)!,&#ITR9$"8D?.F#8@V;\BXF/.FCIPQ9>:         x
ML/ * &# 8 @; ( ) + , F5.GS-, 8&6 / DP&&C10P9 + 6#, <)$@X<. 7#<] &I ((FC5 (X;^30 x
M^1 EF35 (09? # < = '.2) ( @Z<ZR^, 0."#AK!' L ^ D < 1 / & J9LR= (86 / 9K 4K, N (<.6" x
M$) ,'A) ([8=!T!"$D3)LV: <A"8GEV8  =  K+D Q023DRC!L03TC*$5.FS)J%!F*Jx
M  !&[2)LP:=CH   $$%RA"N,H   4"5EDB  LA2:@X*4)E(0'AQ!LT?VY#1HGI5*I?x
MS[Z="I  K2:8,L=+$!7SY+HH0J4*<   (H@4D   11   J6001)   RY   ,D   (;8QA1QAXx
```

Bennett Falk is an Application Specialist for BASIS, Inc., and has been enthralled by UNIX, its uses and users, for quite some time now. Copyright © 1987 by Bennett Falk. All rights reserved.

for one or another commercial compiler, and you may have difficulty adapting the code for a compiler other than the intended one. Still, it can be quite instructive to download a source file and tinker with it until it can be used with the compiler you own.

Downloading **ascii** files is simple, requiring none of the fancy protocols needed for binary file transfers. You can display the item you want to download on the screen and use the "file capture" feature of your communication software to create a local file that contains the information you want.

"**Shar**" (shell archive) files are a more complicated version of **ascii** format. Frequently a source code posting will consist of more than one file; rather than have each file posted independently, all the files will be collected into one "shell archive." In addition to the text of the source code files to be transmitted, the shell archive contains UNIX shell commands to "unbundle" itself into its components and, if the author was very clever, check the integrity of the resulting files.

Remember: **shar** files are basically UNIX Bourne Shell scripts. Don't download the **shar** file unless you want to do a lot of tedious editing on your computer! Instead, use one of the UNIX editors to strip off the USENET message header and any other commentary at the top of the file (there is frequently a notation in **shar** files that explains where to make the cut). At the UNIX shell prompt, issue the command "**sh sharfile**" (where "**sharfile**" is the name of the file you've saved from USENET). This will extract the **sharfile**'s component files. If these are all straight **ascii** files, go ahead and download them; they need no further processing from UNIX.

USENET postings may contain encoded binary files—not source code at all, but compiled programs ready to be decoded and run. Binary postings are usually **ascii** representations produced by the "**uuencode**" utility, and this will customarily be noted in the message header or a brief note from the author at the top of the article.

As with shell archives, some further processing of **uuencoded** files is needed to produce anything usable. First, save the USENET posting in a UNIX file as described above. When you next exit to the shell, run the command "**uudecode myfile**" where "**myfile**" is what you saved from USENET. Usually a **uuencoded** file will not even need to have the message header stripped out. For more information on **uuencode** and **uudecode**, see the entries for these commands in the online manual.

Again, be careful. There's no telling what kind of file will result from this decoding. In the best of all possible worlds it will be a binary file that can be used on your computer. Files produced by decoding a posting on the net should be downloaded to your local computer using some protocol that will insure an error-free transfer. Kermit and Xmodem are widely used for this purpose.

"**ARC**" files are archives created with some version of the **arc** command. These archive or library files will contain a number of other files which, in order to be used, must first be extracted from the archive. "**ARC**" is a utility for personal computers, though there has been some attempt to port it to UNIX. If the result of your "uudecode" command is a file whose name has an "**.ARC**" extension, you will need some version of "**ARC**" to extract the components of this archive file. "**ARC**" is readily available on Bulletin Boards, but be sure to look for a version compatible with the archive you have picked up from USENET. Usually, you will need to download the "**.ARC**" file for further processing on your local computer. Download archives with the same precautions you would use for binary or executable files.

Sometimes, lengthy files have been run through the UNIX utility "**compress**" before being sent through the net. Ordinarily compress produces filenames with a "**.Z**" extension. To use such files, you will have to "uncompress" them with the UNIX command "**uncompress filename**" or "**compress -d filename**". Files should be "de-compressed" before downloading. Again, it is probably best to take the precautions appropriate to binary transfers.

As you may have guessed, some of these five "formats" may be combined. It is common for **uuencoded** articles to contain either compressed files or **ARC** archives, so don't be surprised if you need to do some further processing after decoding the posting.

Once you have successfully downloaded things from USENET, don't forget to remove any temporary files you may have made on the UNIX system you're using. This will make life easier for everyone by freeing up disk space for other users and leaving you with an uncluttered directory in which to work the next time.

Software distributed through USENET comes in all flavors: there are separate newsgroups for most of the major brands of personal computer. A sampling of these newsgroups will show that participants are not shy about requesting software to meet their needs. If you don't see what you need at first glance, post an item inquiring about it. If someone responds with a posting, you can put into practice all this advice about downloads. ☐

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Commodore's New Year: Forecasts And Speculation

By Matthew Leeds

Happy new year! Now that we're past the holiday hazards of hangovers, gift returns, and eggnog, it's time to face forward and start the new year with decisive action and a smile on our faces. We Commodore fanatics have lots to look forward to, and I'm going to speculate on some of the possibilities.

Rumors have been flying for months regarding CBM's plans for new machines. By now its IBM compatibles should be available, unless plans have changed. I will not spend any time on them, as they add nothing new to the sea of clones drowning the distribution channels, and are not priced low enough to create a huge demand. Since CBM already has production lines working to supply the European demand for clones, its decision to market them in the US will not cost much, and they may pick up a small chunk of market share. More power to them.

The New Amigas

Of far greater interest are the possible new Amiga machines, which have been discussed, shown behind closed doors, and speculated over. I'm not privy to any inside information, so I will just try to put into perspective the various possibilities.

One configuration that's been talked about is the B52, sometimes known as the A500. Several designs have been discussed, but the general trend is for a low-cost Amiga, with an integral keyboard, a single internal disk drive, the power supply removed and converted to a brick (a la the 64C and 128), and some modifications to the ports. This down-scale Amiga would resemble the Atari 1040 in appearance. The disk drive would be moved to the right side of the case, requiring a change in position of the bus expansion port. Rumor has it that the relocated port has been moved to the left side of the case and turned upside down to avoid massive redesign of the motherboard; this design will create problems for expansion products which use the bus port. Imagine a memory expansion product designed to sit flush to a desk on the right side, hanging in mid-air on the left side.

Other rumored modifications include standard 512K of RAM, Kickstart V1.2 in ROM, and minor (?) changes to the serial and parallel ports. A less often discussed possibility is the removal of the RGB video port in favor of a NTSC and RF only port, as on the 64C. Pricing around $700 – 800 seems to be the target for a CPU and monitor system.

I've checked the prices on Commodore systems (Dec '86) and this is what's available currently. All prices are based on a CPU, single drive, and monitor. A 64C system is $500, a 128 system is $750, and an Amiga system is $1200. You may be able to find slightly better prices if you hunt, but let's use these for discussion. If a down-scale Amiga becomes available at the same price as a 128 system, will Commodore continue to sell and support the 128? Software written specifically for the 128 is showing up in some quantity, but so is Amiga software. The huge base of 64C software has been used as an argument for purchasing a 128, as has the CP/M software base, but a low cost Amiga would create a significant increase in Amiga software development. 128s have sold well, with an installed base of over 500,000, but an Amiga at the same price point might do even better.

What about the 64C? CBM's cash cow has been recased, and priced up about $50, proving once again that the market finds its own value for goods. The production costs on the 64C by now are next to nothing, and as long as the public continues to buy, CBM will continue to manufacture.

If Commodore comes out with a low cost Amiga, what will happen to the A1000? Some insiders have said that CBM plans to discontinue the A1000 in favor of a new, more powerful machine, known by several names; Ranger, A2000, XYZ-killer, etc. The current design is the A2500, basically an A1000 with several expansion slots inside. The case is taller to allow room for the internal card slots, some of which may be IBM compatible.

The current design for Amiga expansion cards is known as Zorro, a 100 pin design that's not compatible with the 86 pin bus expansion port. The A2500 design currently requires a re-design of Zorro cards to a smaller printed circuit board to fit into the case. This new form factor has caused much concern among Amiga hardware developers, who now face three different standards when creating products for the Amiga market. Adapters that plug into the expansion bus allow the use of existing 100 pin cards, but the current limited market for cards and card cages may cause a shakeout among manufacturers before the market and standards stabilize.

Engineers at Amiga are working on a new chip set which will allow the use of 2 MBytes of graphics memory, instead of the current limitation of 512KBytes. It does not seem likely that the new chip set will be included in the current plans for the A2500, and this means that another new Amiga will eventually surface.

How does all of this affect current or potential owners of Amigas? This depends on your planned use and current needs. If you already own an Amiga, congratulations. If you need to add to it, find a reputable supplier for an expansion cage. If you plan to purchase an Amiga, don't wait. Given CBM's track record on getting new products to market, you'll be waiting quite a while regardless of what surfaces. All of this is just speculation anyway, and is only fit for whiling away the hours until we see what finally happens. Consider it mostly for its entertainment value.

The bottom line is as it ever was. Commodore markets great computers, although it sometimes has a hard time letting the market know about them. Third party hardware and software developers create great applications to take advantage of the power available, and often overcome any inherent problems in the design. Witness fast-loaders for the 64, keypad enablers for the 128 in 64 mode, and hundreds of dedicated programmers for the Amiga. Hang in there, maintain a sense of humor and patience, in the long run things either work out or they don't.

GEOS Update

It's time for an update on GEOS. The new version 1.2 has been out for awhile, but several new applications have also arrived. *geoDex* is a desktop application that files names, addresses and telephone numbers, along with two sort codes. It's your standard file manager type program, with the expected features. It comes with *geoMerge*, a mail merge program that combines a *geoWrite* document with a *geoDex* list.

The *GEOS Deskpack 1* has an icon editor, calendar program, Black Jack game, and a graphics converter that will let you use files from *Print Shop*, *Print Master*, and *Newsroom* with *geoPaint*. *Fontpack 1* has 20 new fonts with some very useful and clever styles. New device drivers are available to handle light pens, mice, and several new printers, including the Apple LaserWriter. If you don't feel like buying a LaserWriter yourself, you can upload your files on QuantumLink, and Berkeley Softworks (415/644-0883) will download them, print them out for you, and mail them back. Naturally your account will be billed, but the charge is around $3 for the first page, and less for each additional page.

The RAMdisk and new mouse drivers are done, and the 128 version of GEOS will be shown at the Winter CES in Las Vegas. I'll have a report in one of the next two columns, depending on deadline.

And Now A Word From Our Columnist

Gang, I've been writing this column for over a year now. I'd like to hear what you think of it. Send in your suggestions, but keep them clean. What would you like to see in here—tutorials on software, inside gossip, news and info, general reports on new products, mini-reviews, weather reports? Believe me, I'm having fun doing this, but sometimes it's like echo canyon without the echo. I'm not complaining, but a little feedback would be nice once in a while. Anyway, I appreciate your readership.

That wraps it up for this month. Thanks in advance for your suggestions. See you next time. ☐

Matthew Leeds is a writer/photographer specializing in high technology. He has been involved with Commodore computers since 1983, and co-produced the Commodore Show in San Francisco. *Copyright © 1987 by Matthew Leeds. All rights reserved.*

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CORPORATE ACCOUNTS WELCOME

DATA BASE MANAGEMENT

R:BASE System B—The Agony And The Enter Key

By Warren Sirota

Part I

Lamentable as the pun is, it more or less accurately reflects my feelings about the *R:BASE* experience. *R:BASE System V* is agonizingly close to being an ideal database system, and Microrim has come closer than anyone else to creating an effective system of "programming by hitting the Enter key." The product is a major evolutionary step forward from *R:BASE 5000*, a product which contained one of the best application generators on the market. Its roots go further back still, to *R:BASE 4000*, an early competitor of *dBASE II*, and to mainframe database systems originally developed for NASA. Microrim has long trod the rocky and often unmarked path towards understanding what "application development" is all about, and the experience shows. However, they have not quite reached the end of that road with *System V*.

Regular readers will be aware that I am a great fan of application generators; for me, every line of code is an opportunity for a programming error, and every three lines of code can be arranged in six ways, exactly five of which are wrong. I believe in very high-level languages; I also believe that my time (and database programmers' time in general) is better spent on system analysis and design than in writing code to handle all of the administrative baggage that is necessary in a database application: standard types of reports, add/change/delete routines, etc.

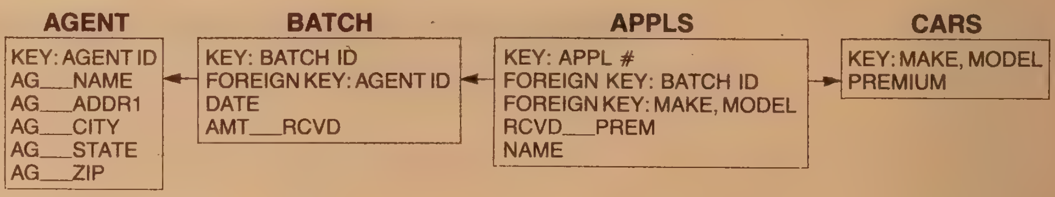
The theory behind application generators is that there are many tasks common to all applications, and that it's possible to pick and choose general-purpose routines and paste them together with a little bit of customization. In the course of developing these systems, I think that the various vendors involved discovered that the variety of tasks which need to be handled to make such a system effective was greater than anyone anticipated. *R:BASE System V* contains many more options in the Applications Express than were available in *R:BASE 5000*, and really seems to be closing in on the problem.

SAGA OF AN EXAMPLE DATABASE

The war of the specifications (which has more fields allowed per record, how many characters per field, etc.) is sometimes meaningful in comparing database systems, when you run into some operational limit like "no memory left" and have to start devising awkward workarounds. However, most applications don't strain the capabilities, in this sense, of micro DBMS systems these days. In this context, the only specification that is truly meaningful to me is "mean time to create a Standard Application." Unfortunately, there is no such thing as a Standard Application.

I gave *R:BASE* a real test, one that would exercise its abilities to handle several different tables and the relationships among them. I used the specifications for a job that I had bid on for a local insurance company. This company would get a batch of insurance applications and a check for the total premium from an agent, and the program would be responsible for checking that the premium listed for each application was correct; it would then add up the premiums and check that the total matched the check. Several reports would be generated from this information.

FIGURE 1



A diagram for the database design is shown in Figure 1 (already we have one aspect of *R:BASE* open to minor criticism—it doesn't generate graphic diagrams of databases showing relations among its tables. *PC/FOCUS* provides this type of diagram, *dBASE III* does not). It is presumed that the CARS table is filled in first, and is more or less stable—rates don't change every day.

One aspect of this database design is a general design point worth noting, especially where monetary values are concerned. Notice that the application table contains a field called RCVD_PREM, which contains the premium amount reported on the application (no check was received on an per application basis—the check would apply to an entire batch of applications). Isn't this redundant information, though? If we have the make and the model of the car, can't we look up the premium in the CARS database? Isn't keeping that information in the APPLS table a violation of relational theory's prohibition about keeping one piece of data in two places?

Well, not exactly. The answer to this conundrum is that there are actually two pieces of information here: the amount that the tenderer thought was correct, and the amount that we have stored in our CARS table. Also, consider the consequences of a change in the PREMIUM amount in the CARS table. If this were to happen, there would be no way to find out the amount paid for that particular policy without the RCVD_PREM field. For the same reason, it is necessary to keep a record of the amount actually received for the batch in the AMTRCVD field of the BATCH table.

Defining the database in *R:BASE* is a piece of cake. The process is more or less equivalent to that in *dBASE*—you type in field names, choose characteristics, etc. There are several excellent aspects of this operation. Firstly, you can define *computed* fields, which are fields that don't hold data in and of themselves, but rather are the result of calculations performed on existing fields. Secondly, when you type in the same fieldname in several different tables, *R:BASE* knows that you intend this to be a common field for relational (lookup) purposes, and automatically ensures that the fieldtypes specified are identical. It also shows "knowledge" of this relationship in several other contexts, as we shall see later.

Indices can be created for any field or expression (if the expression is defined first as a computed field). *R:BASE* differs significantly from *dBASE* in this area. When you retrieve data in *R:BASE*, you can include a "SORTED BY" clause in the command. *R:BASE* does an implicit sort, which will be quicker if an index exists. Also, direct retrieval of a record is faster if an index exists. However, the actual code that you write doesn't know whether an index is in use or not, and it is impossible to update a table without updating its indices, in contrast to *dBASE*, which allows you to do both. This treatment of indices offers some advantages in terms of maintainability, although there may be a performance price. In *dBASE*, the programmer controls which indices are open at all times. This opens the possibility of controlling this in an absolutely optimum fashion, but it also opens up the possibility of making mistakes. And what *dBASE* programmer has never forgotten to open an index when needed?

Continued next month

Copyright ©1987 by Warren Sirota. All rights reserved. *Warren Sirota is a database consultant with experience in a wide range of languages. He also composes and programs conputer music. He lives in Oakland and can be reached at (415) 482-3979.*

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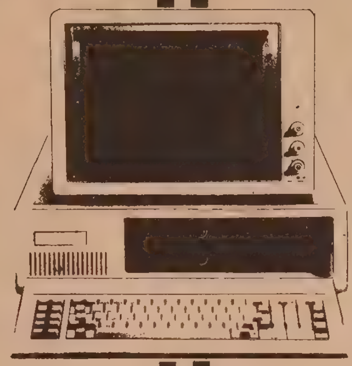

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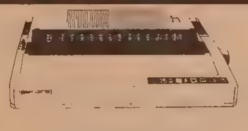

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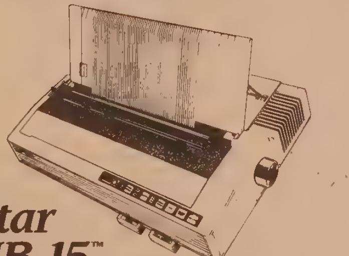

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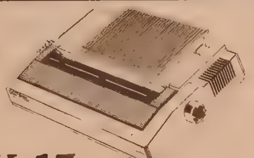

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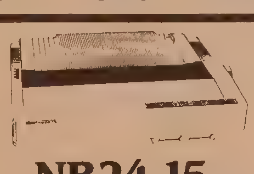

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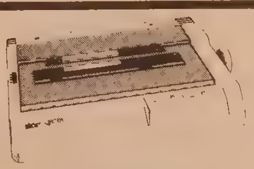

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TELECOMMUNICATIONS

Packetgate—The User Loses

By Brock N. Meeks

Even as Washington is trying to cope with Irangate, a similarly hush-hush process is underway which will profoundly affect and probably cripple the ethernet. I call it "Packetgate." The similarities include hostages, quiet negotiations, clandestine collaboration, and a reliance on the free enterprise system to "fix a problem."

The situation is essentially this: packet-switched networks, such as Telenet and Tymnet, may soon be driven out of business by a proposal before the Federal Communications Commission (FCC). This proposal, if approved, will reregulate packet-switching networks, and subsequently eliminate free local telephone access to those networks.

"The result of this proposal is that anyone accessing a commercial online system or information service, like CompuServe or The Source, from a packet-switched network could eventually see rates double or triple," says Philip M. Walker, vice president and regulatory counsel for Telenet Communications Corporation. "Those using Telenet's PC Pursuit might be looking at a cost increase of three or four times."

The initiative for this new proposal, called Computer Inquiry III, sprang quietly from the Bell Operating Companies (BOCs) and AT&T. It is no surprise that these companies, which supply telephone service to the majority of America, will benefit the most from FCC reregulation of packet-switching networks.

DEREGULATION AND COMPETITION

At the heart of the matter is the way packet-switching networks are defined. In 1980 the FCC formulated rules under its Second Computer Inquiry, better known as Computer II, that defined the difference between "basic services" and "enhanced services."

Basic services are regular local and long-distance telephone services. Enhanced services are computer-based services, like packet-switched networks, data base and online services, and services that offer protocol conversion.

The Computer II Inquiry ruled that basic services would continue to be regulated as they had always been. However, the FCC's ruling on enhanced services dictated the implementation of deregulation, which fostered competition. The ruling prompted several companies to enter the packet-switching market, including the BOCs and AT&T. Significant price reductions resulted from the competition among these packet-switching companies.

The FCC also ruled that the BOCs and AT&T had to keep separate accounting figures for their basic and enhanced services. This prevented the Big Boys from subsidizing their enhanced services with revenue from the lucrative basic services. In addition, the FCC ruled that if the Big Boys used basic service telephone lines for enhanced services they would have to give their competitors free access to those same lines. This ruling lets a packet-switched network, like Telenet, offer you and me free access to "nodes" in thousands of cities around the country.

Because the BOCs must offer local-access phone lines to these packet-switched networks free of charge, in accordance with Computer II, the cost of using such services remains reasonable. This current situation directly enables GTE to offer its low-cost PC Pursuit service for a flat fee of $25 per month.

COMPUTER INQUIRY III CHANGES THE RULES

Computer Inquiry III, in essence, is asking, "Should we redefine protocol conversion services as 'basic services' rather than 'enhanced services'? Should we redefine all those companies (packet-switching providers) as common carriers?" The result would allow the BOCs and AT&T to charge their packet-switching competitors local dial-in fees to access their telephone lines. In addition, Computer Inquiry III would allow the BOCs and AT&T to subsidize their own "enhanced services" with revenue from their profitable voice telephone basic services.

This opens a path for the BOCs and AT&T to provide their own packet-switched networks on a non-compensatory basis. According to Telenet's Walker, this would allow the BOCs and AT&T to monopolize the packet-switched services, driving out most competitors.

EXPECT PRICES TO SKYROCKET

The ramifications are obvious: if the BOCs and AT&T can start charging these packet-switched companies to access their phone lines, costs will skyrocket.

"If we had to pay local access charges, it would cost us about $3.60 an hour at the originating end for calls made by users to online data bases and information services like CompuServe," says Walker. "We would have no choice but to pass along these rate increases to our customers." For companies that have their own installed networks, such as CompuServe, costs will also increase.

Early in 1986 CompuServe added a 25¢ per hour "communications surcharge" to all of its connect rates. It was only a foreshadowing of things to come. "If the FCC passes on this thing [Computer Inquiry III] our users are going to be hit with tremendous cost increases. It could make online services prohibitive for all but the affluent," says a CompuServe official who didn't wish to be identified. "If you think there's a gap between computer haves and have nots now, look again. Computer III could lock out a lot of computer haves."

This rate increase would also be a dart aimed right at the heart of PC Pursuit. Because the PC Pursuit network uses modems at both ends of its connection the cost increase would be a double-edged sword. According to Walker, this would impose an additional eight or nine dollar an hour charge on PC Pursuit, a charge which would be passed on to its users. PC Pursuit would most likely die a swift death. A similar fate would befall several of the smaller, independent online services, as well.

Just as we are beginning to see a trend by regional networks, like The WELL, to become accessible via a packet-switched network, we would see the trend come to an abrupt end. And some of the smaller, economical online systems, such as American PEOPLE/LINK (Plink), would have a hard time maintaining their user-base as rates vault from the low $4 an hour range into double digits.

STACKED DECK?

Mark Fowler, Chairman of the FCC, is lauded by the press as a "fair-market zealot." Sources at the FCC claim that Fowler is in favor of this reregulation in the hopes that it will lead to increased competition and a better price structure for consumers.

This is probably not going to happen. According to an official for PacTel, speaking on the condition that he not be identified: "It's no secret that PacTel badly wants a piece of the packet-switching pie. They are pushing—hard—for passage of the proposal; all the BOCs are. It would provide an easy way to squeeze out the competition." He added that the FCC advisory committee heavily favors passage of the proposal. If that's true, it's all but a foregone conclusion that the FCC will vote in favor of reregulation.

If the proposal passes, as it is likely to, anyone with a modem would be held hostage. The BOCs could charge whatever they wanted for access to their own packet-switched networks, without the fear of strong competition. Subsidies from voice telephone revenues would allow the BOCs to move into packet-switching with little risk. Telenet, Tymnet, and the like cannot possibly compete with the deep pockets of the BOCs in this type of head-to-head competition.

Although the proposal carries startling changes for the online community, word has not circulated. Like the National Security Council's hushed negotiations and obscure dealings, the FCC has made little attempt to publicize this proposal.

Yet FCC approval of Computer Inquiry III would "have a major impact on anyone using a packet-switched network to access online bulletin boards, data bases, or information services aimed at the residential user," says Walker. "They are going to get creamed if this happens."

WRITE NOW

The proposal is going before the FCC soon. It's time to get on your word processor and write. Address your letters to:

The Honorable Mark Fowler
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Tell Mr. Fowler that reregulation will decrease competition and drive prices up—not down. Refer to Computer Inquiry III in your letters.

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Brock Meeks is a San Diego-based freelance writer whose telecommunication costs already rival the national debt. *Copyright ©1987 by Brock N. Meeks. All rights reserved.*

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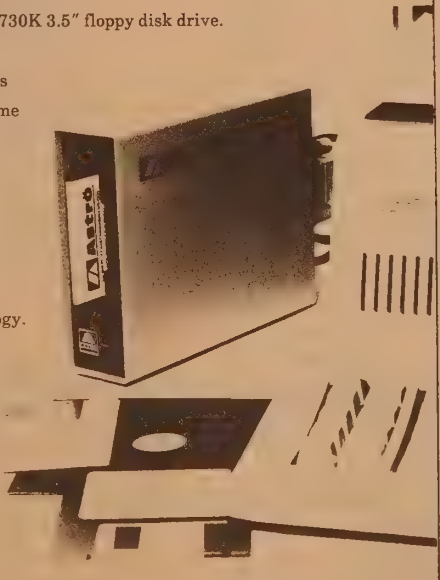

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ATARI ST

Report From CES:

Atari's Laser Printer, Mega ST, and PC-compatible

By Helmi Kobler

Though microcomputers have lost some of their presence at the Consumer Electronics Shows in recent years, you wouldn't know it by hanging around Atari's booth at January's Winter CES. Atari used the show to announce and display three significant hardware products, all strategically positioned to expand Atari's influence in selected fields of the micro industry.

It came as no surprise that Atari had plans to push the ST as a desktop publishing machine. The ST's fast 68000 processor, its high resolution monochrome graphics and reasonable price tag make it a natural candidate for publishing. Until CES, though, it had not been officially touted as a DP machine. The introduction of Atari's low cost, 300-dots-per-inch laser printer changed that.

To be sure, the Atari laser qualifies for the inelegant but accurate title of "World's Dumbest Laser Printer." Basically, it's just a Canon laser engine enclosed in a large plastic case. It's "dumb" because it has no dedicated processor or RAM onboard, something conventional laser printers rely on to run page description languages, store type fonts, etc. Hooked into the DMA port, though, Atari's laser borrows the ST's 68000 CPU and RAM to handle those tasks. By taking this approach, Atari has kept the laser's retail cost below $1500, and has also given the printer a good amount of versatility. The number of accessible fonts is limited only by your ST's free memory, and since page-description languages are RAM resident, you're not locked into using one language burnt into the printer's ROM. Atari's laser could conceivably use any disk or cartridge-based languages.

Atari hasn't revealed much as to the page description language they plan to offer with their printer. They did, however, confirm that it would not be a PostScript protocol, which will come as a disappointment to many. Page-description languages are big things in laser printers; they tell the machines how to print fancy text and graphics images on paper. Adobe Systems' PostScript has become the standard page-description language for most laser printers, but it looks like some bright third party developer will have to do some licensing before Atari's laser can use it.

Along with the laser printer, Atari introduced the Mega ST, a new and improved, next-generation ST designed with the professional user in mind. As Atari's President Sam Tramiel said, "The features in the Mega ST are the direct result of requests from dealers and business users." Coming in one-, two-, and four-megabyte versions, these STs are modular in design and include a few other new twists such as an internal clock, the ability to address a whopping 16 megabytes of RAM, room for two additional daughter boards on the main circuit board, and a full 68000 bus for add-ons such as a card-cage, giving the Megas a wide open architecture.

A Mega ST system comes in modules, as opposed to the single unit convention of earlier STs. A basic Mega system will consist of a detachable keyboard with traditional ST key layout, a CPU box with built-in 720K floppy drive, and either of the SM124 or SC1224 monitors, all in the familiar dove-grey shade. The sleek looking CPU box, packed with all standard ST ports (DMA, MIDI, Parallel, Serial, etc.), is a little taller than an ST floppy drive and occupies slightly more than a square foot of desk space. Future add-ons such as Atari's SH-205 20 megabyte hard drive will have similar dimensions, allowing various components to be stacked like a stereo system.

While both the laser printer and Mega STs shown at CES were only prototypes, they're expected to be completed and ready for release sometime in April. The retail figures Atari could provide were that the Mega STs would start selling at around $1000 for a one-megabyte machine, and that a Mega ST, presumably the roomy two- or even four-megabyte version, would be sold with the laser printer for about $3000.

While it has absolutely nothing to do with the ST, some people will undoubtedly be interested in Atari's new PC, so I'll briefly acquiesce and pay it a little attention. The Atari PC is a 100% IBM compatible complete with 512K of RAM (expandable to 640K on the motherboard), 256K of dedicated display RAM, parallel and RS-232C serial ports, built-in 5¼″ floppy drive, XT style, 84-key detachable keyboard, and included CGA, EGA, Hercules and monochrome graphics capabilities. The PC uses an 8088 CPU with 4.77 and 8.0 MHz clock speeds, and includes a socket for an 8087 math co-processor. No expansion slots are included, but Atari plans to release a separate expansion chassis later on. Standard IBM compatible floppy drives are not supported, either. Because identical drive connectors are found on the ST, you can add 3.5″ ST floppies or ST 5¼″ drives available from companies such as Paradox.

The Atari PC will retail for $499 less monitor, and for $699 with a tri-sync EGA monochrome display. Availability is scheduled for April.

MORE NEW PRODUCTS

More and more ST products are finding their way into the *MicroTimes* offices lately, and I'll be keeping you posted on what's new.

AssemPro is a full-featured assembly language development package from Abacus Software (616/241-5510), the same company that cranks out ST books like there was no tomorrow. The $59.95 package integrates an editor, a fast two-pass assembler, debugger, and disassembler into one efficient GEM program. A unique feature is the assembler's handy error-editing ability—it allows you to correct code blunders on the spot without abandoning the assemble process. This is a great time saver for the ones who tend to omit those silly little commas every once in a while. Other features include macro support and a complete macro library of all GEMDOS, BIOS, XBIOS, VDI and AES calls. The 175 page manual covers everything lucidly.

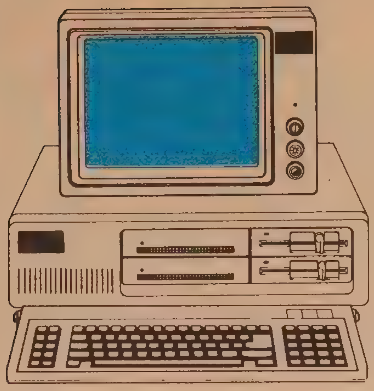
Also from Abacus is an *Introduction To MIDI Programming*, a 256-page book that guides you through a grass roots introduction of MIDI to actual programming info and technique with a Casio CZ-101 synthesizer. It's stressed, though, that the material covered can be applied to any MIDI synth. The book was co-authored by Len Dorfman and Dennis Young, creators of XLent Software's *Typesetter Elite* and *ST Music Box*, among other titles. They've included the C source code to *Music Box*'s Auto-Player for example's sake; a good familiarity of C is required to make heads or tails of this book.

Spin kicks, body slams, leg drops and airplane spins are all in a day's fun with *Championship Wrestling* from Epyx (408/745-0700). Face eight unique wrestlers in the ring or take on a friend; with over 25 moves to choose from, you're guaranteed the "creative edge." The game does a remarkable job in capturing the true spirit of professional wrestling; the crowd cheers, jeers and yells assorted vulgarities, while each wrestler comes complete with his own obnoxious personality. Taming the computer is a little too easy, but the two-player mode makes for a great party game.

For those who wish to use IBM compatible SCSI hard drives with their ST, Berkeley Micro Systems (415/530-3436) has the BMS-100 Adapter Card. The $250 package includes the Adapter itself, with battery backed-up time and date card, and an Adaptec ACB-4000 controller. If you'd prefer to use your own controller, BMS sells the Adapter alone for $135.

And finally, Atari Corp. (408/745-2160) has released the Winter, 1987 edition of its *International ST Software Catalog*. The softcover volume offers descriptions of over 600 ST software titles from the U.S. and Europe. Software categories cover various business applications, art, music, games and more. Product high points are listed, as well as other information such as retail price, availability date and the countries in which the title can be found. An included Company List provides the addresses and telephone numbers of developers that support the ST as well. Not a bad reference book for $12.95. ☐

Helmi Kobler took his first step into the computer world in 1983 when he walked out of Macy's with an Atari 800 in his arms. Still an Atari user, he's now inseparably attached to his ST. He can be reached through MicroTimes or e-mail <helmi> on The WELL at (415) 332-6106.



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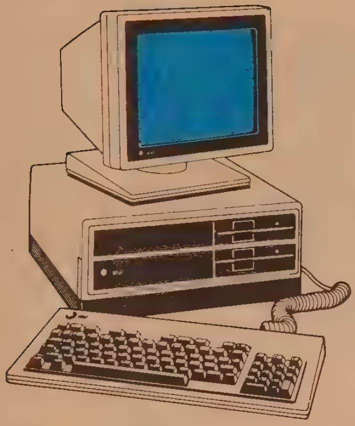

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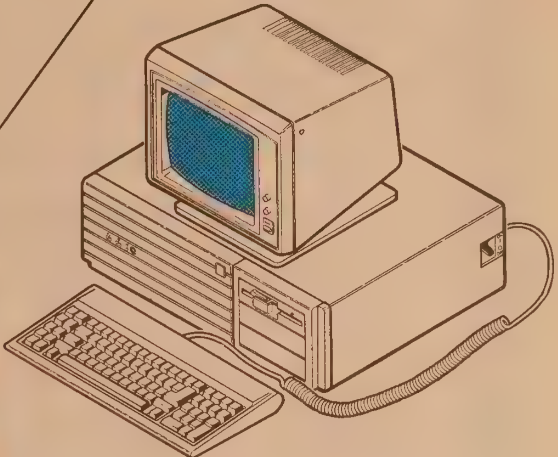

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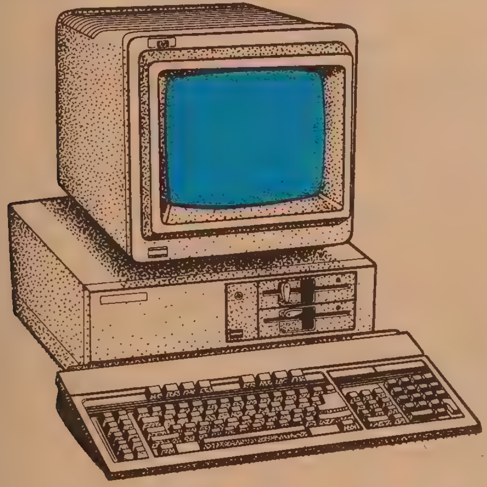

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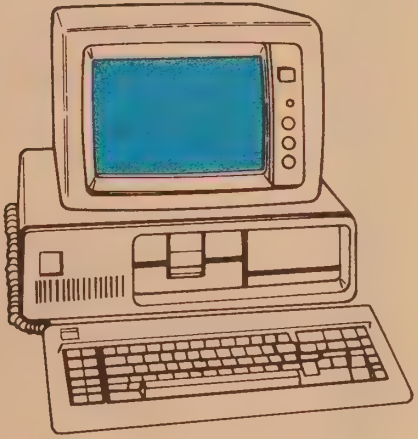

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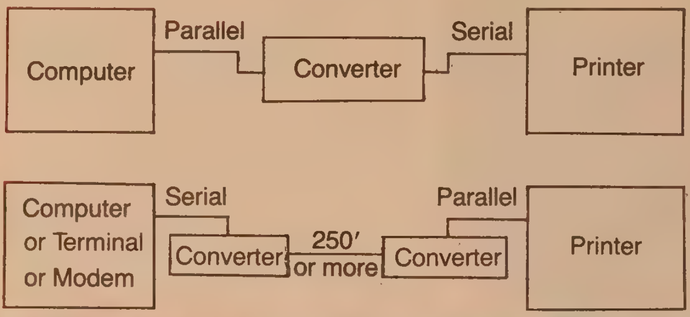

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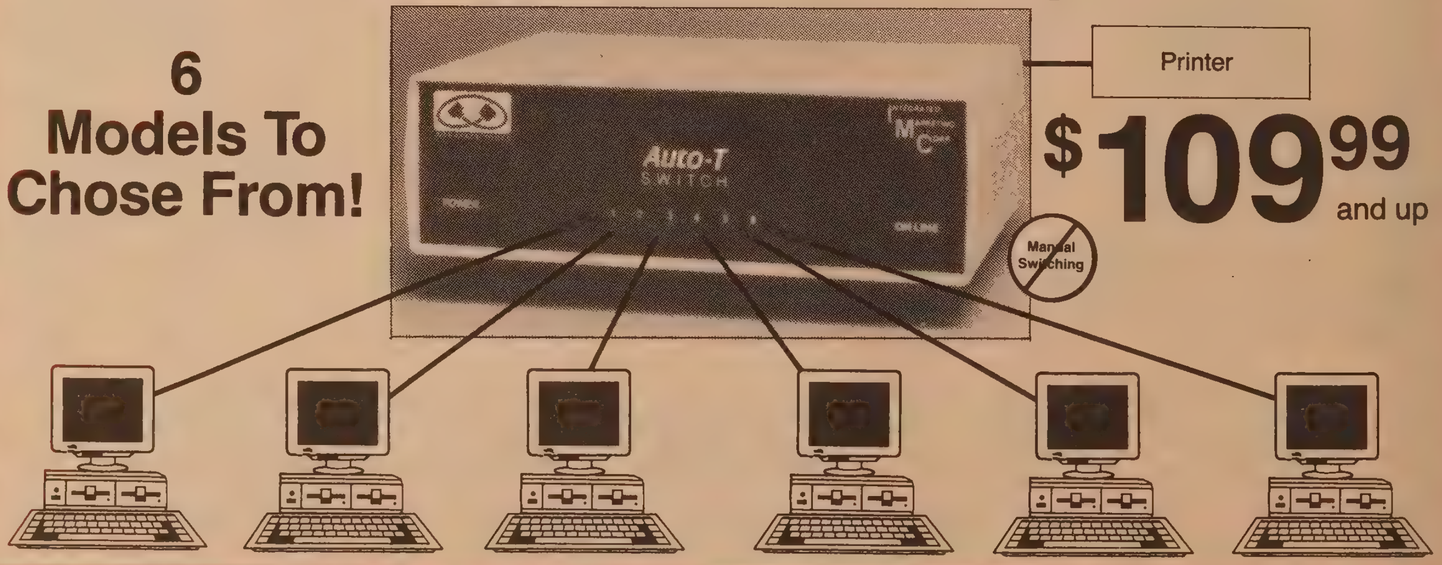

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PC SYSTEMS

Productivity Peripherals

By Ken Milburn

You bought your PC so that you could get more done in less time. If you've had it for long, you know that speed spoils. Repeatedly waiting for the computer, even if it takes only a few seconds, quickly becomes intolerable. Or at least annoying. Even if you've moved up to an AT or 386 PC, you start getting annoyed with yourself for not being able to move faster. After all, time is money. Keeping that adage in mind, I've been on a quest for accessory hardware that speeds up my interaction with the machine.

LOOK MA, NO HANDS

One of the culprits most responsible for slowing me down is the necessity of typing. I type pretty fast, but it's never fast enough. One of the quickest and easiest ways to eliminate some of the typing is with a "macro" program like *ProKey* or *SuperKey*. You "teach" it to play back a series of keystrokes whenever you hit the key assigned to that series. The series of keystrokes can be of almost any length and can represent anything you'd type on the keyboard. Once loaded, the program stays in memory, so it can be used in conjunction with most any active application; you can strike a key and automatically execute a long series of commands, or have the computer automatically type three paragraphs of "standard" text into a business letter.

Macro software is such a powerful productivity tool that the capability is being built into more and more application software. Nevertheless, a stand-alone memory resident program has the advantage of providing you with a consistent macro command interface for all your applications. It's also likely to have more flexibility than the built-in variety.

The leading keyboard re-definition (macro) programs are Alpha Software's *Keyworks*, RoseSoft's *ProKey* and Borland International's *SuperKey*. My personal preference is for *SuperKey* because its pull-down point-and-click menus make it so easy to remember how to operate some of the program's more sophisticated (and therefore rarely used) options.

Keystroke memorizers have become so popular that some new varieties are emerging—programs that already have a good many words and phrases entered for you. Two examples that come to mind are *PRD Plus* from Productivity Software International and *MindReader* from Businessoft, Inc.

PRD Plus lets you assign keystrokes to abbreviations. As soon as you type the abbreviation, *PRD* replaces it with the assigned key sequence. The difference between *PRD* and most macro programs is that there are no control keys to keep track of, and the abbreviations are easy to remember, so it's practical to have hundreds of them. So if I type "cptr," *PRD* instantly replaces it with "computer." Or, if I type "pcc" it displays "IBM/PC/XT/AT and compatible computers."

By contrast, *MindReader* is a word processor that does most of your typing for you. Whenever you start typing a word, *MindReader* tries to guess what you mean, popping up a windowed list of the words that are the most likely candidates. Of course, if you're a very fast typist, you can often type the words faster than you can make the selection from a list. Fast typists have to get used to the program by learning to ignore the listed suggestions until a word is long enough to save significant time. Once I'd learned to do that, I found it a great tool for taking dictation whenever I needed to interview people for articles on the phone.

If you're not a touch typist, *MindReader*'s a real boon. It's also great for those who are still intimidated by computers. All the commands for the program are executed with the function keys, and their use is mapped out for you on the screen at all times.

As word processors go, *MindReader*'s not very sophisticated. Some "standard" operations, like inserting text and moving, copying and deleting marked blocks are awkward, at best. If you're a fairly seasoned user (or if your word processing requirements are complex), I suggest you do your typing in *MindReader*, then edit in your favorite word processor. But there are some advanced features. You can draw, do math in a pop-up calculator and squirt the result into your document, pop-up a quick look at this month's calendar, and do word jumbles. You can also split up the screen into two windows for editing different parts of the same document concurrently.

IT'S IN HERE SOMEPLACE

Another way of saving keystrokes is to re-use information that's already been entered in to your system. Sometimes you've entered information into your spreadsheet that you need to include in a letter. You can use data you've received from another computer. Or perhaps you've got a database report you'd like to include in a bid or proposal. The problem is, most programs store data in their own unique format or intersperse text with unique "control codes" that would garbage up your hard copy.

Once upon a time, it was difficult to get clean data out of one format and into another unless you were an experienced programmer. Most of the current generation of programs include file conversion utilities that let you ship data to and from at least a few popular programs made by other manufacturers. At worst, you may have to transfer the file to the format of a program you don't own, then import it to its destination. For instance, I use the *Smart* spreadsheet for systems costing and client billing. *WordPerfect*, my choice for word-processors, doesn't read *Smart* files, but it does read files from *Lotus 1-2-3*. So all I need to do is have *Smart* convert the file to *Lotus*'.*WKS* file, then have *WP* convert it to its own format. Then I can incorporate the spreadsheet into the text for my Client Needs Analysis report.

Another option is to convert the source data to straight ASCII text. ASCII is the format that all computers use to recognize plain vanilla keyboard characters. Again, most programs will have an ASCII file conversion utility, but failing that, look in the printing commands for a way to "print to disk." The result will be an ASCII file with the text formatted just the way it would look on paper, with all the control codes stripped out. If all else fails, try reading in the raw source file. Chances are, the originating program doesn't convert to ASCII because it creates the file that way in the first place.

SCISSORS AND GLUE

An even more direct method for getting information from one place to another is "cutting and pasting." In order to do this, you need to use a memory resident program like *SideKick* or *Instant Recall*, or a multi-tasking environment like *DesqView* or *Windows*. Why? Because you need to load the program with the source information, cut out the piece you need, unload the source application and reload the destination application, then paste the captured text to its destination. In between loading applications, a "clipboard" has to stay present in memory to hold your text.

Instant Recall is a simple text database that pops up with a "hot key" like *SideKick*. I keep it running on my computer at all times (except when using high-resolution graphics programs). That way, I can make an ad hoc note about anything that crosses my mind. Later, I can retrieve all the notes relating to a specific subject by typing in a few keywords. Not only will Instant Recall cut and paste, but you can keep the clipboard information as part of the regular data file and recall it later for use in other documents.

Hardware can save your fingers, too. One of the most frequently repeated keystrokes is pressing the arrow keys that move your cursor to the next point for input and editing. Arrow keys can't move the cursor any faster than your keyboard repeats, which can be gratingly slow if you're editing a lot of text. Eliminating that one hangup saves me about 25% of the time I spend editing.

Any pointing device (mouse, digitizing pad, joystick) will do the job. The best compromise between cost and effectiveness in pointing devices is a good mouse. I've mentioned the Logitech C7 Plus that I use in previous columns. Its programmability has been improved since I last wrote about it, and there are now pre-programmed templates for most of the popular

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Ken Milburn is a freelance writer on Microcomputers. His articles have appeared in numerous computer publications, including PCWorld, InfoWorld, Computer Graphics World *and* MicroTimes. *He also does system configuration for small businesses. He can be reached at (415) 331-6296 or by sending E-mail to (ken) on The WELL, (415) 332-6106.*

business applications that include pull-down menus. Logitech has also made the C7 available as a bus-mouse, just in case you don't want to use one of your serial ports.

Key Tronic's model 5153 sports a built-in "touch pad." It's really a miniaturized digitizing pad that replaces the numeric keypad. It can serve several purposes: (1) Cursor key emulation, (2) Additional function keys, (3) Mouse emulation (4)Tracing/drawing pad. Although these are the same functions bit-pads traditionally provide, the advantage of this one is that it's built right into the keyboard. That means that it doesn't take up much extra space on your desktop, you don't have to worry about where to store it when it's not being used, and you don't have to take your hands very far away from the typing keys when you need to use it. Besides, it costs about half what most digitizing pads sell for, and you get a better than average keyboard in the bargain.

The sad news is that the 5153 is incompatible with many of the AT clones. It will work with Compaq's 286 and 386, and DeskPro's and Sperry's IT Extra. Machines with older Phoenix ROM/BIOS are a definite no-no. If in doubt, test before buying.

The modes I find most useful are the mouse and function key modes (and it's possible to combine the two). The touchpad emulates the Microsoft Mouse, so it works with *Windows*, *Microsoft Word*, *AutoCAD* and just about any other mouse-based application.

Unfortunately, Key Tronic doesn't provide any way to program the mouse for pull-down menus or for operation with any non-mouse business applications like *WordPerfect* or *Lotus 1-2-3*. That's where the function-key capability comes in, though. In this mode, 36 programmable function keys are added to the ten you've already got on an IBM keyboard. This is almost a necessity if you want to use some programs (like *MultiMate Advantage*) with a macro program (like *SuperKey*). That's because *MultiMate*, like a few other programs, assigns a special purpose to all but one of the existing keys. More importantly, you can use the 36 function keys to automate operations that you constantly repeat. I've made a *WordPerfect* 4.2 template that can perform my most used command sequences with a single touch of the pad. And I've written the use of each key on the paper template, so I don't have to remember what it does.

The uses I've put these keys to are too numerous to mention, but here's an example of the kind of time you can save yourself. As a writer, I'm often typing in information as I find it, then reading all the files into the same document, rearranging and editing the comments so that the whole thing reads smoothly from top to bottom. The key sequence for marking and moving a paragraph in WordPerfect is: **<Alt F4>** (Turn "block" on), **<Enter>** (Mark to the end of paragraph), **<Ctrl F4>** (Block menu), **<1>** (Cut the block). Then you have to move the cursor to the location where you want the cut block to reappear and press: **<Ctrl F4>**, **<5>** (Retrieve text).

Here's the way I do it using the Key Tronic touch pad: I type three asterisks at the beginning of my collated document. Then I use the "Search" key to find the first paragraph I want to use. I press the keypad square marked "re-order para" on the keypad. The paragraph is automatically moved a couple of keystrokes ahead of the asterisks, so that they are always the last items in the article. One stroke of the keypad has replaced twelve *WordPerfect* keystrokes and completes the operation in a fraction of the time it would take to do it manually. Re-organizing the information in this column took me about ten minutes. Doing it by hand would have taken at least an hour and a half.

Programming the keypad to do all this is a cinch. Key Tronic provides menu-driven configuration software, so all you have to do is tell it what keystrokes to perform for any given numbered square on the keypad.

If you're getting into desktop publishing, you will find yourself wanting to incorporate drawings into your publications from time to time. When the 5153 is being used with a graphics program, you can place existing hard-copy drawings on the touch pad and then "trace" them into the graphics program with a precision of +/- 1/1000". If your original is larger than 3½" square, it won't fit on the touchpad, however. You could use your Xerox to reduce it first. Or you may need a larger digitizing pad.

One digitizing pad, the Pencept Penpad Plus, comes with a unique keystroke-saving feature. It is capable of reading hand-written characters directly into the computer as though they'd been typed. Where the Key Tronic 5153 keeps the touchpad on the keyboard, the Pencept puts the keyboard on the touchpad. This is especially significant if you use your computer more intensively for graphics than for text-oriented business applications. If you're a *Lotus 1-2-3* user and use Lotus's Freelance for producing presentation graphics, PenPad Plus should be of special interest. It comes with a pre-programmed template that can easily cut production time in half.

I'll cover graphics input devices in an upcoming column and will cover the PenPad more thoroughly there. In the meantime, a keystroke saved is a few more pennies earned. ☐

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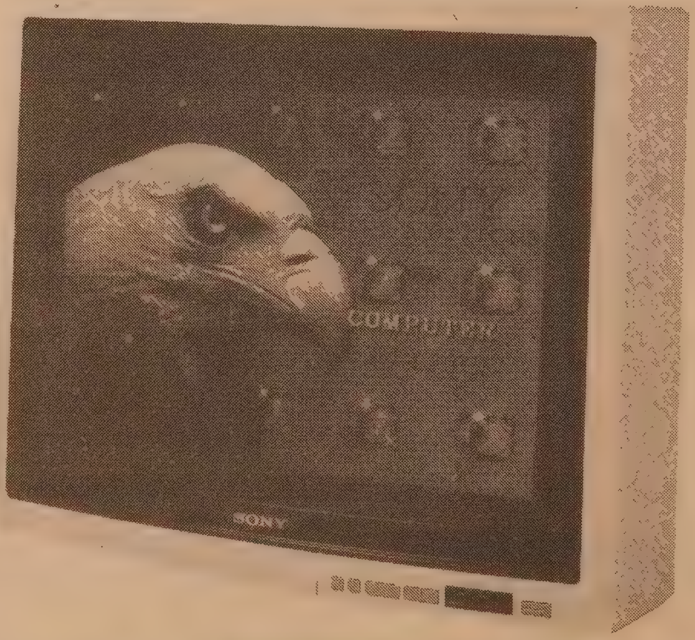

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DOS SOLUTIONS

Improving The User Interface

By Wayne A. Yacco

This column and the next examine some considerations for writing and using batch files. This month we will discuss pipelining, more on redirection, and some additional control characters that can add to the appearance and sense of urgency of messages.

Two new useful batch files are included this month but, for the most part, they are not examined closely because they are operationally similar to **DELBAK.BAT** which was featured last month. One significant difference between these files and **DELBAK** is the way they modify the normal operation of the **PAUSE** command, so we will take a look at that difference first.

Last month's job redirected a file named **BRK** to the **PAUSE** command, which causes **PAUSE** to behave as though a **CTRL BREAK** has been entered from the keyboard. This causes **COMMAND.COM** to issue a second prompt which is easier for the novice user to understand and more difficult to respond to in error. It also skips a level of required response if the user wants to abort the job.

Using redirection to achieve this end, while instructive, is not, however, the most efficacious method available. For one thing, storing, managing and accessing the extra file, **BRK**, requires unnecessary effort. The concept of the pipeline is introduced in this month's jobs to circumvent this redirection.

In this sense, pipelining is the practice of automatically transferring the output of one program directly to another, as its input, without specifying the use of an intermediate file. The compound command **ECHO ^C | PAUSE** pipelines the **CTRL BREAK** character, output by the **ECHO** command, to the **PAUSE** command. The desired end is achieved without the use of an intervening file. N. B.: This method does not work if the input requires a character that is a delimiter for the command processor (e.g., a carriage return). This method will also not work for all versions of DOS.

Wayne Yacco is an independent data-processing consultant with a practice in the San Fernando Valley. Since 1980, he has assisted clients in the implementation of microcomputer-based systems. Questions may be sent to him at P.O. Box 4239, Burbank, CA.

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> **In this sense, pipelining is the practice of automatically transferring the output of one program directly to another, as its input, without specifying the use of an intermediate file.**

Instead of redirecting input to **PAUSE**, we will now redirect its output to **NUL** — the proverbial bit bucket. **NUL** is a system file name (analogous to **PRN:**) that causes output to be discarded when used in this manner. With this addition, **PAUSE** will no longer display the message "Strike a key when ready..."

Note that the redirection symbols, < and >, cannot be used within remarks (REM statements), or elsewhere in a batch file unless they are used for redirection of in- or output. This is because **COMMAND.COM** will *always* look for a file with the name of whatever follows a redirec-

```
echo off
goto :enddoc          D E A D L Y
rem
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * *                                           * * *
rem        * * * © Copyright Wayne A. Yacco 1987.          * * *
rem        * * *                                           * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem
rem    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem      CAUTION, THIS JOB DELETES PROTECTED FILES!
rem      This job displays a file, or files, specified in a
rem      parameter (%1) and pauses. If it is not terminated
rem      by entering 'Y' or 'y' (sans quotes), then those file(s)
rem      are unprotected (write enabled by ATTRIB) and
rem      deleted.
rem    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem

:enddoc

    if %1null = = null goto :error
    if not exist %1 goto :error2
    dir %1
    echo ▶ ß
    echo ▶ Enter N to delete PROTECTED file %1.
    echo ▶
    echo | pause > nul
    attrib -r %1
    del %1
    goto :end__of__file
:error

    echo ▶
    echo ▶ File(s) must be specified.
    goto :end__of__file
:error2

    echo.
    echo File not found.
    ponder 2 (a two second delay command which must be
    on path)
    dir /w /p
:end__of__file
```

Legend:
▶ = ^P the highlight character
ß = ^G the bell (no character)

```
echo off
goto :enddoc                 D D
rem
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * *                                           * * *
rem        * * * © Copyright Wayne A. Yacco 1987.          * * *
rem        * * *                                           * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem        * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem
rem    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem      This job displays a file, or files, specified in a
rem      parameter (%1) and pauses. If it is not terminated
rem      by entering 'Y' or 'y' (sans quotes), then those file(s)
rem      are deleted.
rem    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem

:enddoc

    if %1null = = null goto :error
    if not exist %1 goto :error2
    dir %1
    echo ▶
    echo ▶ Enter N to delete file %1.
    echo ▶
    echo | pause > nul
    del %1
    goto :end__of__file
:error

    echo ▶
    echo ▶ File(s) must be specified.
:error2

    echo.
    echo File not found.
    ponder 2 (a two second delay command which must be
    on path)
    dir /w /p
:end__of__file
```

Legend:
▶ = ^P the highlight character

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tion symbol.

We have also introduced two additional control characters in these files. The **ˆP** character displays a bright arrowhead that highlights the following message. The **ˆG** will sound a beep that is precisely as annoying as if it were part of an expensive program. The jobs require a command file, **PONDER.COM.**

The entry of control characters in a file was explained in last month's column. The principles also apply, if the file is a batch job, with one exception. **EDLIN** (for DOS version 3.1, perhaps others as well) has a glitch in it that must be dodged when entering a control character, in a character string, to be displayed by **ECHO.** If the **ECHO** command is entered using **EDLIN**, and the string to be displayed by **ECHO** contains a control character, then **EDLIN** ends the line with two carriage returns and a line feed. Since lines are normally ended with a single carriage return and a line feed, this will cause **COMMAND.COM** to process the *following* command line improperly. The following command will not be recognized, as a valid command, as a result.

One way to avoid this problem is to use a word processor which allows the output of unformatted ASCII files that contain control characters, as explained last month for *WordStar* and Microsoft *Word*. *Word Perfect* users can also enter control characters into unformatted files in the, absolutely, most obvious way. To enter a **Ctrl-C (ˆC)** simply hold down the Ctrl key and strike the "C" key. Files can be saved without formatting through the **TEXT IN/OUT** menu **(Ctrl-F5)**; select the first function, "1 — Save current document as a DOS text file."

For avoidance of the problem, in **EDLIN**, use the following procedure when entering an **ECHO** command that is to contain a control character.

1.) Enter a line containing only the control character(s).
2.) Edit the line just created.
3.) Use the INS key to insert other text required to complete the syntax.
4.) Use the F1, F2 or F3 key to copy the control character(s) from the template.
5.) Enter any other required characters.

This line will end with the normal carriage return and line feed (ASCII characters 13 and 10).

> **Using these suggestions can allow batch jobs to be employed as replacements for DOS utilities which sometimes act unexpectedly with unfortunate results.**

EDLIN occasionally inserts other hidden characters into lines that cause processing to fail. It is often the line following the error that fails in execution.

Word processors may also cause this problem with hidden characters. A friend of mine was unable to compile an assembly source file that he swears was properly created using *WordStar*'s nondocument mode. Nevertheless, something had set the high order bit of a single character that was causing the compilation to fail (not all versions of the Microsoft assembler will fail to compile properly in these circumstances).

These seemingly inexplicable problems can be detected using **DEBUG.** Those unfamiliar with **DEBUG** may find it easier to simply delete the suspect lines and then reenter them. This may solve the problem unless the glitch is consistent, as with **EDLIN**'s handling of control characters.

This column has provided suggestions that can improve the user interface of batch jobs. Using these suggestions can allow batch jobs to be employed as replacements for DOS utilities which sometimes act unexpectedly with unfortunate results.

Two batch jobs, **DD** and **DEADLY**, have been included to demonstrate that principle. They are similar in function to **DELBAK.BAT** but more generic. Both add a preview of files to be excised to the standard **DOS DEL** and **ERASE** commands. **DD** provides a directory of the files to be deleted and offers the user a simple means of electing whether or not to complete their deletion. **DEADLY** performs the same function but adds the ability to delete files which have been declared as read only with the **ATTRIB** command. Note: although utilities are available which can be used, with early versions of DOS, to modify file attributes, read only files should be used with care with those versions of DOS. Some versions of DOS commands will not function properly with protected files and batch jobs referencing them may fail or give unexpected results.

NEXT MONTH: Next month this column continues with things you can do to make a batch job run faster and more efficiently.

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On Drawer, On Painter, On Blitter, On Pixel

By Newt Pippin

Easy on-screen drawing with the Macintosh is what first attracted many of us to this particular computer, but in retrospect screen drawing may not be quite enough. Even though the Macintosh display is amazingly clear and crisp compared to other types of personal computers, the reality is that, for many applications where the end result is hard copy, we want more resolution than any video screen can provide.

On screen, the Macintosh shows 72 dots per inch, or a few hundred dots each way for the total screen width and height. By contrast, most laser printers, including Apple's own LaserWriter, get 300 dots in each inch. A decent plotter or film recorder might offer resolution ten times better.

Paint-type programs, including *MacPaint* and *FullPaint*, however, are limited to exactly the resolution of the screen. That's because they use the display not only as their output medium, but as the storage for the image being created. A paint program doesn't record your intentions with any more precision than 72 dpi, so at output time it can't make very good use of anything significantly better.

Paint programs also are limited in what they can do with text. Once you've created a block of text and have signalled you want to move on, a paint program converts the text to on-screen dots, again limited to the resolution of the screen. That means that output from *MacPaint* doesn't make use of the high resolution fonts that text applications can call upon (although the LaserWriter does do some smoothing of jagged edges if you request that mode).

THE OBJECT OF IT ALL

There are, of course, object-oriented drawing programs (such as *MacDraw* and *MacDraft*) that can match their output resolution to the capabilities of higher resolution devices. Because they save objects as descriptions of the drawing process rather than the resulting dots, they can tell an output device what the idealized shape should be and let the output device come as close as possible to that description.

Some text-oriented packages also have some limited drawing capability. Programs such as Microsoft *Works* let you create some simple boxes and line constructions right in your document, and you can combine text and *MacPaint*-style documents for printing.

If both paint and draw approaches have their own unique advantages, one obvious answer would be to combine them. And that's exactly what several firms are now doing.

Unfortunately, it's hard to keep that same ease of use and flexibility with a word processor or object-oriented drawing program. The Mac can't read our minds, so we have to tell it explicitly what we want done —all in a very stylized and formal way. That's fine for drawing squares, but it's a rough way to do a sketch.

PUTTING IT TOGETHER

If both paint and draw approaches have their own unique advantages, one obvious answer would be to combine them. And, in fact, that's exactly what several firms are now doing.

The first package I noticed that made a conscious attempt to bridge the gap was *GraphicWorks* from Mindscape (apparently a more dignified version of their earlier *ComicWorks*). In *GraphicWorks*, you draw in Paint fashion on Easels, then add your text in Balloons. Normally, the balloons stay separate, letting you get revisable, high quality text along with the pixel-oriented graphics.

Another program that combines modes is *SuperPaint*, from Silicon Beach Software. This drawing program uses a double-layer approach, letting you electronically overlay paint and object-oriented images. You get not only quality text and easy sketching, but you get to choose the set of tools and approach that works best for each item in your creation.

In theory, either of these approaches should solve most of the problem (at least for LaserWriter output), and they are both very worthwhile packages. In practice, it turns out that there are a few limitations on putting the two modes together in one document.

According to the authors of *GraphicWorks*, the biggest problem with the combined approach is speed. As you may have noticed already, the LaserWriter (or any other PostScript-based printer without scads of memory) is very slow at producing compound documents. "A complex page containing many bitmapped images in conjunction with text balloons could easily take one-half hour to print," the manual warns with what my experience says is good reason.

Another possible problem is the indivisibility of 300 by 72. Objects designed for 72 dots per inch are about 4% off at 300 dots per inch, often enough to throw off the alignment of the paint layer with the draw objects (the draw objects keep their proper size when scaled).

Lastly, there are apparently some peculiarities about the way Apple has implemented the QuickDraw graphics routines inside the Mac and the PostScript driver that most applications use to translate from QuickDraw to PostScript form. In *GraphicWorks*, for example, you can't have other than rectangular paint regions if you also use object-oriented text, and you can only combine the two layers by addition, not by other rules such as "exclusive or."

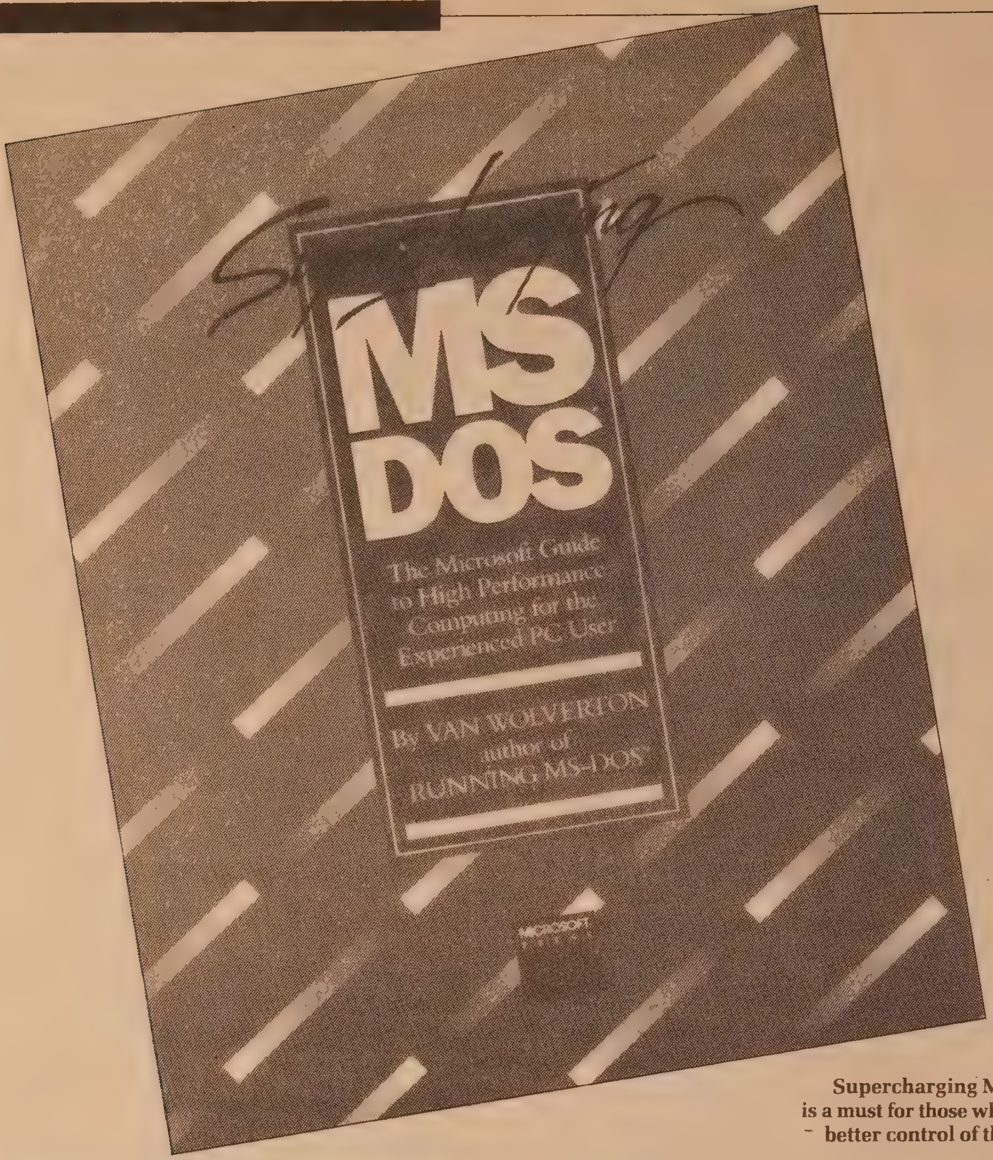
The solution that *GraphicWorks* recommends is to convert objects and text into the paint image (in effect, rasterizing the object display list, for those who speak techie). That guarantees that what you get is what you see, and speeds output somewhat (the bit maps are still relatively slow, but there isn't the constant delay of loading and initializing fonts). You don't get laser-quality text and objects, but everything does fit.

In *SuperPaint*, Silicon Beach simply warns you that printing takes a while. The paint portion of the program only lets you define rectangular regions to work in, so that takes care of the main QuickDraw problem. And a feature called "LaserBits" allows you to define small regions which you work with in magnifed form on screen, but are saved at 300 dots per inch for accurate printout (you can't do your whole drawing at 300 dpi because there isn't enough available memory).

Both these approaches work well enough for illustrations, manuals and everyday business correspondence. You quickly learn to allow for some text versus image misalignment, or to pick which areas are worth the time and memory to edit in the full 300 dot per inch form.

A full solution for perfectly combining paint and draw approaches isn't immediately available, and there isn't likely to be one soon. Printing technology will probably provide higher resolutions than video screens for the foreseeable future, and too many applications use QuickDraw to change its peculiarities. So short of a breakthrough in screen designs, we'll have to just settle for some partial solutions —solutions, we might note, that are still far ahead of what anybody is offering on those less graphical personal computers. ☐

Newt Pippin started out with a 128K Macintosh when Apple first introduced the product and has worked his way up to a Macintosh Plus hooked up to a LaserWriter. He works for a communications company in the San Jose, CA area.


Supercharging
MS DOS
The Microsoft Guide to High Performance Computing for the Experienced PC User
By VAN WOLVERTON author of RUNNING MS-DOS
MICROSOFT PRESS

Supercharging MS-DOS is a must for those who want better control of their PC.

BOOKS

Supercharging MS-DOS

Written by: *Van Wolverton*
Published by: *Microsoft Press (1986) 320 pages*
List Price: *$18.95 softcover*
Reviewed by: *Wayne A. Yacco*

Van Wolverton's first friendly guide to DOS, *Running MS-DOS*, was originally published back in 1984 and became a classic. Now he has produced a second book which starts where the first left off. If you want to learn how to make DOS jump through hoops, this is probably where you want to start.

Although the cover touts this as a "Guide to High Performance Computing for the Experienced PC User," there is plenty of useful information for even the neophyte who is an avid student of DOS. This book makes you want to throw out your menu program and get your hands dirty.

On the other hand, if you *want* a menu program, the text includes everything you need to create your own, including a complete example in the appendix. This represents a certain amount of work, on the part of the user, but there is also a companion disk available that includes this and all of the other programs, jobs, and scripts in the book. It is well worth the additional $15.95 investment if you plan to use many of the programs.

The contents are divided into three sections. In "Going Beyond the Basics," chapters deal with introductions to the extended character set, **ANSI.SYS,** printer escape sequences, **DEBUG,** and advanced batch-file techniques. Another chapter explains the design of interactive menus. **ANSI.SYS** is used to control screen attributes and keyboard enhancements. This allows the user to send escape sequences that change the way information is displayed and the characters that the keyboard generates for each keystroke or combination.

In the second section, "Customizing Your System," topics include using **CONFIG.SYS** to modify the system's environment; setting up and using a RAM disk; increasing control of the display, printer, keyboard, and menus; and how to manage disk-based files. A final chapter offers a number of useful recommendations that help you optimally maintain and use your hardware.

The final, "Quick Reference," section contains a collection of handy appendices: **ANSI.SYS** commands, Epson-compatible printer commands, character sets, key codes, hexadecimal conversion tables, and the sample menu system.

My only minor objection to Wolverton's approach has to do with his zealous inclusion of **ANSI.SYS** escape sequences. Those users who choose to eschew the **ANSI** driver for speed considerations, or use an alternative driver in its place, may have to modify many of the jobs in at least some slight way. For those few, these jobs may be a little too dependent on the **ANSI** driver.

Even so, the principles are sound and the jobs serve as excellent examples. The author's attention to the user interface, although elaborate, is worthy of study. Though his screens require some work, they are unlikely to lead to confusion. His code also makes provision for inappropriate user responses, an often overlooked requirement.

Anyone who wants to obtain a modicum of control over DOS should be familiar with most of this book. Careful study will propel users well on their way to mastery of their operating system. I recommend it enthusiastically.

WORD PROCESSORS

Easy Extra

Version: *Easy Extra* 1.5; *EasyMail* 1.0

Published by: *Micropro International*
For: *IBM PC/XT/AT or compatible, DOS2.0 or greater, minimum 215K free RAM (380 desirable), hard disk (1,343,488 bytes) or two floppy drive System (7disks)*
Price: Easy Extra—*$149; Easy (without mailing subsystem) $99*
Reviewed by: *Ken Lisec*

Easy Extra is a word processing and mailing system designed for first time users, but it also has enough sophistication and functionality to allow even computer experts to use it. *Easy Extra* performs word processing, mail list management, spelling correction and file format management. It is completely menu driven, with context-sensitive on-line help always available. *EasyMail* enables entry level users to access a simplified yet powerful database application designed to produce mailing lists, mailing labels and customized form letters. The *Easy* word processor is also available without the mail system.

Easy provides pop-up menus in a way that does not interfere with the professional, yet allows first time users and novices to get the information they need when working with the package. The functions menus sit hidden from view until called; by depressing the F2 function key at any time, you call up the first of two menus at the top right of the screen. This menu contains the most often used functions. If the function you're looking for is not on that menu, press the F2 key again.

The help function is activated by pressing the F1 key, causing a "pop-up" window to appear on the top half of the screen. It tries to guess what help you are looking for and presents a screen accordingly. If it guesses wrong, you can go to a help index and search for the specific topic you want.

Operations that require multiple keystrokes—the kind of thing that even professionals need help with—are easy with *Easy*, which tells you exactly what to do on each keystroke. For example, to move a paragraph, select "move text" from the menu. The program then tells you to move your cursor to the beginning of the text to be moved and hit enter. Next it tells you—in English!—to move your cursor to the end of the data you want to move and tap the enter key. You are then prompted to position the cursor at the beginning of the place you want the data moved to and hit enter again. You can also use several commands (called dot commands) to easily set headings, footings, type size, new page, etc., just as you would in *WordStar*.

Being specifically designed for the beginner, *Easy* can reconstruct text deleted by accident. The last deleted text is always available for reinsertion anywhere in the text, and can be used as a buffer for insertion at several points in the text.

Text is formatted and reformatted automatically, depending on the options chosen at the beginning of the current edit session. Also, if you want to change a specific data string, there is a set of commands to find and change it. And again, this is all accomplished with easily-understood prompts and questions.

The built-in spelling checker uses the Houghton Mifflin American Heritage Dictionary; it's invoked from the menu and has only one drawback—the cursor must be at the beginning of the area to be checked. Otherwise, the spelling checker is great—it's fast and provides you with menus and options

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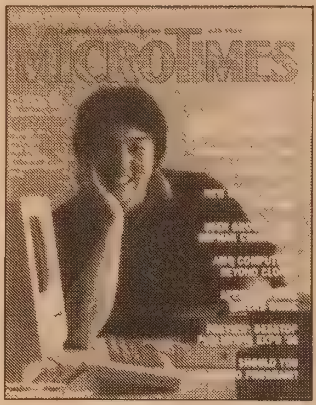

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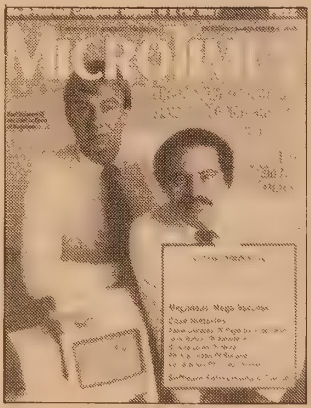

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to correct the text right away, add the word to your dictionary, replace all occurrences of the word, etc. It also searches the dictionary looking for suggestions on how the word should be spelled. This is somewhat time consuming, but of great value to poor spellers.

The *Easy Extra* package includes a mail list database maintenance feature and the ability to use this database to send form letters and the like. *EasyMail* incorporates data entry, retrieval, and sorting capabilities. It is designed to produce multi-segment mailing lists, mailing labels and customized form letters. Data from other records may be duplicated when entering new mailing list records. Up to eight sublists may be created. Customized letters, mailing labels, envelopes, telephone directory, rotary cards and a data base printout can be selected, sorted and printed.

Easy also has an interface to *Lotus 1-2-3*, which lets you include a *Lotus* file anywhere in your text. The file format of *Easy* is compatible with *WordStar*, and *Easy* files can be converted to *WordStar 2000*. *Easy* is also compatible with IBM's DCA (Document Content Architecture) format. The program supports over 240 different printers and lets you use three printers without having to reinstall the software.

Even a first time user will have no problems installing *Easy*. There's no copy protection. It is not necessary to do anything to the **autoexec.bat** or **ansi.sys** files. After installation, simply type **Easy** from the main directory.

I ran *Easy* on an IBM XT and found no real performance problems. It is a little slow when changing functions, and the spell checker seems to perform slowly when it is looking for a suggestion for correction of the spelling. The actual editing and data entry mode is fast, and keeps up with the fastest typist. In the justification mode, word wrap is accomplished smoothly and without hesitation.

Using the tutorial disk even the novice user can be an expert fairly quickly. The tutorial discusses the major functions of *Easy* and shows how to use them. It does not cover the mail subsystem *Easymail*. For a user with some word processing experience, the tutorial is probably not necessary.

The user's manuals (one each for *Easy* and *Easymail*) are oriented toward the novice computer user; they're both comprehensive and clear. There is even a section called "If you're new to computers." This is a ten-page guide in plain English that discusses what a computer and its features are all about.

Error-handling is similarly friendly—a special pop up window fills the center of the screen when an error occurs, telling you exactly what the problem is and, where possible, what to do to get out of it.

Micropro provides telephone support during local business hours in California on its regular San Rafael number. Additionally, you can subscribe to a premium service that provides an 800 number and a newsletter. The support hours are still California local business hours; the cost is $60 for 6 months or $95 for a full year. This premium service seems somewhat expensive, since the basic package retails for $99.

Easy is one of the most affordable word processors and has all the functions necessary for all but the most sophisticated uses. No time is necessary to learn how to use the package, and users can become productive almost immediately. The only caution is that if you expect to require professional word processing features such as indexes, table of contents, page headers and footers and the like, this is not the product for you. However, for the price, the package's functionality is astounding, and Micropro should be commended. (Micropro International Corporation, 869 W. Francisco Blvd., San Rafael, CA 94901, 415/499-1430.)

Aströ EXT1

External 3.5″ disk drive for IBM-PC, IBM PC-XT

By: *Aströ Systems*
Price: *$395 limited-time introductory price; ce;*
$495 regular price
Reviewed by: *Bennett Falk*

The Aströ EXT1 is a handy gadget for owners of the IBM PC or IBM PC-XT. An external 3.5″ diskette drive, the EXT-1 can be attached to the 37-pin adapter on the PC's and XT's standard floppy disk controller. The EXT1 package includes the disk drive itself, a 3.5″ diskette, a power supply, an adapter cable to connect to the PC, the necessary device driver and diskette management software, and an attache-style carrying case. Attaching the EXT1 to a PC-DOS machine that does not have the external disk adapter already in place would require the installation of such a device, which is not included with the EXT1.

The EXT1 enables IBM users to read, write, and format 3.5″ PC-DOS diskettes. These diskettes have a 720 kilobyte capacity, twice that of the standard double-sided, double density 5.25″ floppy diskette.

Using EXT1 to add a 3.5″ drive to a PC system has several advantages. Most immediately, it provides a medium for both regular disk storage and hard disk backups that's less cumbersome than standard floppy disks and more economical than either tape sub-systems or high density floppy disk controller systems. In addition, the EXT1 provides a handy way to move data between DOS-based "laptop" computers configured with the 3.5″ drives and their desktop cousins which have traditionally relied on the 5.25″ floppy disk.

Installing the drive is simply a matter of connecting the included cable to both the drive and the 37-pin connector on the PC, attaching the power supply, installing a device driver in your standard "CONFIG.SYS" file, and rebooting the computer. Of course you will also need to copy the disk formatting software to your working diskette.

Once in place, the drive is addressed from DOS as drive D:, and can be used in the same manner as any other disk drive on the system. The 3.5″ disks are perfectly standard DOS diskettes, and can be examined with products like the Norton Utilities. Be aware that the EXT1 is strictly a tool for DOS machines. You will not be able to read 3.5″ diskettes prepared using, say, a Radio Shack Model 100.

In use, the drive tends to be a bit slower than either floppy disk drives or hard disks. Loading and executing a small program from the external drive took nearly four seconds, compared with two and a fraction seconds for loading from a floppy drive and slightly less than two seconds from a hard disk.

Users may have to think a bit about how best to use the EXT1. With the drive's extra capacity, it is easy to reach the limit of DOS directory entries well before the available storage space is used up. Careful use of subdirectories will avoid this problem.

Documentation accompanying the EXT1 is sparse, and it would be good to have more technical information included with the product, particularly some suggestions concerning external disk drive adapters for those who wish to use the EXT1 with IBM clones. (Aströ Systems, 807 Aldo Ave., #106, Santa Clara, CA 95054, 408/922-5599)

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GRAPHICS SOFTWARE

Twist And Shout

Published by: *Spectre Technologies*
For: *CP/M, MS-DOS*
Price: *$34.95-$39.95, depending on machine*
Reviewed by: *Robert D. Athey Jr.*

This two-for-one offer combines *Shout*—a banner printing program— with *Twist*—a 90 degree reorienting program to print out spreadsheets.

Your first step to using the program is to use your word processor to call up Spectre's "PRINTER.LST" file, which we show; many printers are supported. Since many banner and graphics programs have difficulty supporting a broad range of printers, this is a particularly attractive feature. Based on the overlay assignment for your printer, you get out of the word processor and rename the overlay file to be called "PRINTER" so the *Twist* and *Shout* programs can call it when it's needed.

Another unique feature of the Spectre approach is the inclusion of the "How to Use 'PROGRAM-N.AME' For The Impatient User." Both programs have this instruction set as part of their first page of instructions. The instructions are clear and easy to follow, with further detail explaining why the menu is set up the way it is and how to make stylistic changes. Spectre includes a diagram for the *Twist* program that shows how the dimension definitions they use in the control menu look on the paper.

The *Shout* program offers three fonts, Times Roman, Sans Serif and Olde English in completely blacked out (or filled) format. You can make a large letter from smaller versions of itself—e.g. a 6″ A made up of all As. There are several options for printing: you can put up to four lines of text on your banner, use paper from 8½″ to 14″ wide, and double-strike the letters to make them darker. The letter height for a single line in 8½″ width paper is 7¼″, which means your banner can be read from across the football field.

The Twist program is a fairly standard spread sheet re-orientation program, but it worked well for printing out the very wide short tabulations I recently used in a report for the state. The menu is straightforward. The documentation includes tips on how to use Twist with Lotus1-2-3, Multiplan and other spreadsheet generators, WordStar, Perfect Writer and other word processor programs, and data base generation/manipulation programs. This is a particularly good feature, as it is common for users of an ancillary utility to wonder if and how it may be used with the more commonly used big programs.

All in all, this a good package. I do object to the advertisements in the back pages of the documentation booklet, but that's a minor detail. For the $30+ for this utility package, you get some fun and entertainment, as well as very useful features. (Spectre Technologies, Suite E, 22458 Ventura Blvd., Woodland Hills, CA 91364, 818/716-1655.)

GAMES

Arctic Fox

By: *Kevin Ryan, Jeff Tunnell, Damon Slye and Richard Hicks*
Published by: *Electronic Arts (1986)*
For: *Apple II series, Amiga and Commodore 64/128*
List Price: *$40.00*
Reviewed by: *Mike Markowitz*

Aliens have invaded the Antarctic and are plotting the extinction of the human race by converting our atmosphere to a mixture of ammonia, methane and chlorine. This would be even worse than a third stage Smog Alert in San Bernardino. Only one weapon can fight through mobile armored defenses to smash the alien air converters.

Tanks!

You're welcome.

The Arctic Fox is an extrapolation of present trends in fighting vehicle technology twenty or thirty years into the future. That means smarter electronics, higher speed, a bigger autoloading gun, missile launcher, radar, exotic armor, mine dispenser and (most implausibly) a one-man crew.

There have been dozens of "flight simulator" games for every kind of historical, modern or science-fiction aircraft, but there have been hardly any "tank simulators" before *ArcticFox*. One person can fly and fight even the worst-designed aircraft. But to operate a tank in combat demands the undivided attention of a driver to steer, a commander to search for targets and work the radio, and a gunner to aim.

ArcticFox cuts down the workload by dispensing with the rotating turret. To aim, you point the whole vehicle, just like a fighter plane. The Swedes tried this approach in the '60s in the revolutionary design of their Saab S-Tank. It never caught on

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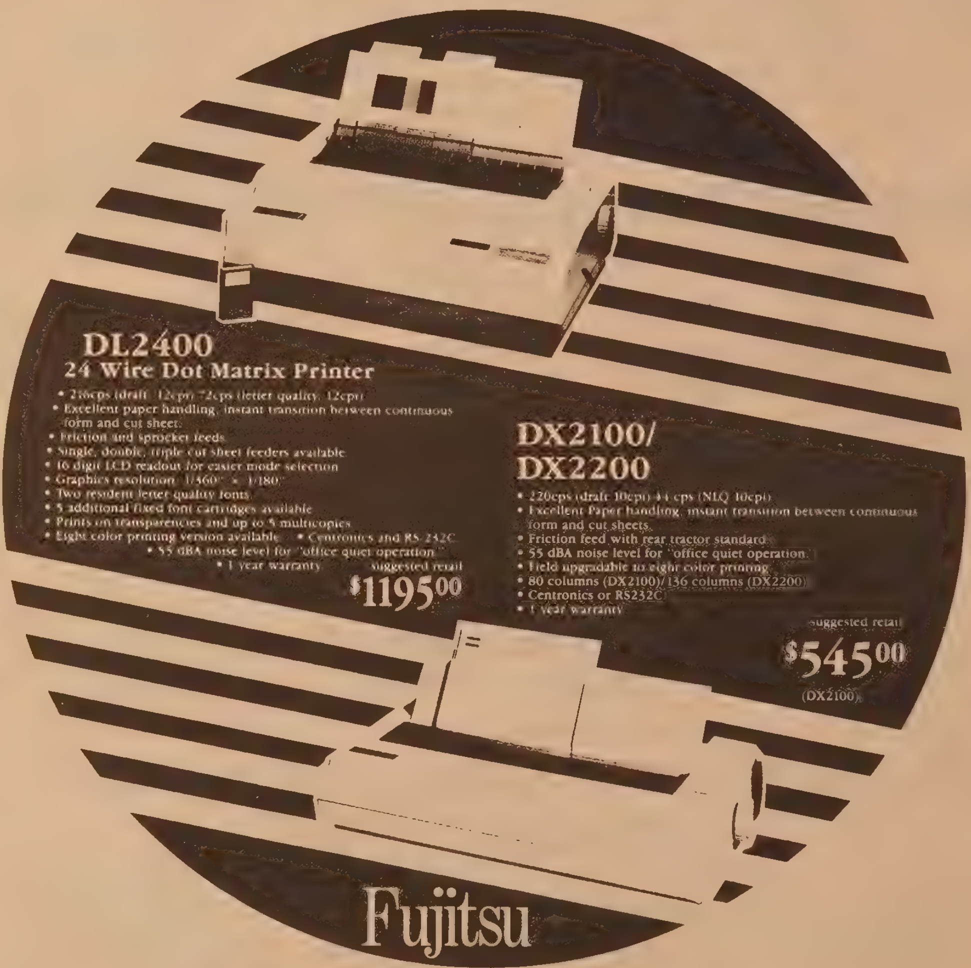

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— too many precision hydraulic components for non-Scandinavian troops to cope with.

The game was originally designed for the Amiga. The Apple adaptation inevitably loses some of the graphic clarity and sound effects of the original. The enemy tanks, aircraft and forts are rendered as transparent wire-frame models rather than solid objects. This cuts down the workload on the microprocessor, but requires a certain willing suspension of disbelief from the user. *ArcticFox* is still an impressive feat of programming.

As you move across the terrain, the scene in the viewscreen changes in true perspective. Since this is Antarctica, the terrain is mostly white, with transparent mountains outlined in black against a clear blue sky. The quickest way to get killed is to drive into an ice crevice. There are "mud flats" that can make you skid, and occasional blizzards that force you to rely on your radar to steer and aim. You are outnumbered about 1000 to one, so expect what tacticians call a "target-rich environment." The enemy fighter planes are especially hard to kill, since they move so fast . . .

There are three levels of difficulty: trainer mode, beginner mode and tournament mode. At higher levels, the enemy gets smarter and you have less ammunition. The control panel is pretty overwhelming. An indicator light tells when you have been spotted. There are readouts for your speed, heading, position, time, missiles remaining, damage and the oxygen remaining in the atmosphere. You use the keyboard to elevate the cannon, move in reverse, fire missiles, drop mines, and dig into the snow. You can also toggle between a rear-view camera and the radar screen. It's quite a challenge to make the right tactical decision when swarms of fighters are swooping down on you.

When the time runs out or you get killed, a summary screen appears listing the targets you destroyed and a "tactical rating" score.

ArcticFox is a fast-paced, highly demanding arcade-type game. To get the most out of it, the player should become thoroughly familiar with the information in the ten-page "operator's manual" and the quick reference card. It deserves a color monitor and a good joystick. (Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.)

Robot Rascals

By: *Ozark Softscape*
Published by: *Electronic Arts (1986)*
For: *Apple II series and Commodore 64/128*
List Price: *Apple $45.00, Commodore $40.00*
Reviewed by: *Mike Markowitz*

A few years back, you may recall a popular game called *M.U.L.E.* from an outfit with the unlikely name of Ozark Softscape (Dan Bunten and Alan Watson). Now they're back — with a computer driven scavenger hunt and card game called *Robot Rascals*.

"I wanted to do a game I can play with my family when we get together at Christmas," says Bunten. "*M.U.L.E.* is just a little too complicated to include the younger family members. So the challenge was to make a game that I can still enjoy if I'm playing against seven-year-olds."

Robot Rascals is intended for two to four players. There are 28 item cards. Four are dealt out to each player at the start of the game. Each player picks a robot that he will direct in searching for the assigned items — and stealing items from other robots. The program remembers each player's name, and picks a random order of play each turn.

During the game, the players scan for items and send their robots out into the computer "wilderness" to retrieve them. The items have wonderfully silly names and cartoon pictures: Digital Donut, Pixel Pencil, Silicon Salad, Buffer Boot, Transistor Taco, etc. Luck cards can force players to swap cards, or give them the opportunity to pass off unwanted cards. You win the game by retrieving all of the items in your hand of cards.

Each robot is animated in its own unique way, so they almost seem to have personalities. Robots store energy, and can exhaust their batteries if they try to do too much in a turn. They can also be damaged moving through rough terrain. Each robot has its own home base, where it can stash items and be repaired.

A twenty-page manual provides set-up instructions and strategy hints. Although the basic game is fairly simple, there are enough options and variants to entertain even the most cutthroat poker players.

The game is packaged in a nice cardboard box. Maybe Electronic Arts has finally decided to give up the useless "record album" style packaging they have always favored. The program is copy-protected, but not even the craziest pirate would go to the trouble of copying two decks of cards.

Can a "social computer game" be successful? If your computer system is like mine, there is not much chance of fitting four people and a discard pile around the monitor, not even very tiny people. It might be possible to disconnect all the cables and drag the computer downstairs to run with the big TV set, but I'd hate to try it. *Robot Rascals* does not work as a solitaire game, unless you have a *severe* multiple personality syndrome.

Nevertheless, *Robot Rascals* is a wonderful bit of silliness. These guys never grew up, and the world is a better place because of it. It would be hard to call this educational software, but schools might find it is a nice way to involve three or four kids with one computer for a pleasant forty minutes or so. (Electronic Arts, 1820 Gateway Drive, San Mateo, California 94404.)

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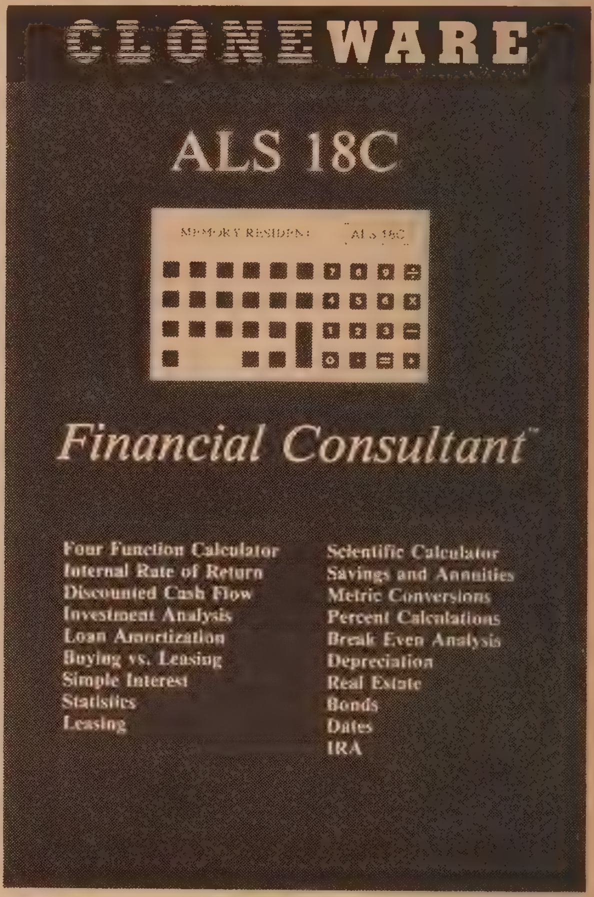
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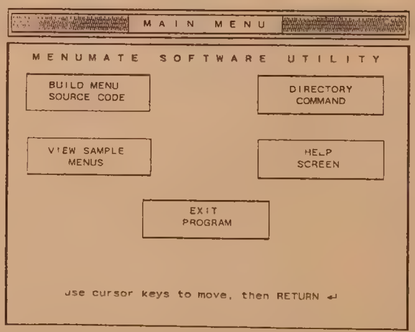
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Version 3.0 of Victory Computer System's *MenuMate* menu generator is now available. For $39, the new release is equipped with several enhancements including the ability to pop menus onto the screen and to add password protection to any menu. Users specify whether they want boxed menus or *SideKick* style menus, available in a variety of colors. *MenuMate* runs on any MS/PC-DOS computer with 384K of memory. For more info or to order a free demonstration disk, call or write Victory Computer Systems at PO Box 62227, Sunnyvale, CA 94088, (408) 730-0384.

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USER GROUP NETWORK

By Mary Eisenhart

Another great month for mail, and a few face-to-face visits. Thanks to all of you who stopped by our booth at the **Macworld Expo** to say hello—it's always nice to have a face to go with the name. Hope to see you all again soon at the **Computer Faire** in March.

The Letter of the Month award goes to **Jim Bliss** of Long Beach. Inspired by last month's report from **Marvin Reznick,** whose possession of an **Apricot** computer has led him, in desperation, to start a company called **Off The Wall Software** for orphan computers, Jim had a brainstorm of his own. Says he: "I have decided to launch a club for us Apricot computer users. There must be several hundred of us in Southern California, judging by the speed with which we were snapping up Apricots at giveaway prices at the Computerland national sale some months ago. With a little publicity from *MicroTimes* perhaps we can all get together and figure out how to make these nifty machines think like IBMs."

Nice, you say. Flattering, you might add. But Letter of the Month? Well, Jim receives this highly subjective award for the name he's given his fledgling group: the **Apricot Roundtable Group of Hapless Hackers. ARGHH!** for short.

If you'd like to be a part of the history of ARGHH!, give Jim a call at (213) 425-6302, or write him at 7215 Killdee St., Long Beach, CA 90808.

Somebody Please Help These People, Continued: Close runner-up for Letter of the Month comes from **Joe Thornton,** who says "I represent the four ST owners in **Incirlik, Turkey.** We are rather in the back woods over here when it comes to information on the ST and would greatly appreciate getting copies of your magazine. Also, public domain material is of course nonexistent here. Is there a list of what is available? How can we access the material?"

Now, the quick answer is "Call the Atari Base BBS." Atari Base is run by Atari itself, 24 hours a day, seven days a week, at 300/1200 baud, (408)745-5308 or (408)745-2642, and there's tons o' software there. However, from Turkey this is something of a non-option.

We're sending Joe the magazine. Perhaps one of you thriving Atari groups out there would be interested in adopting a Turkish user group? If you think you can help Joe and his cohorts, please write: Captain Joe Thornton, PSC 1383, APO NY 09289.

Another worthy cause that needs help—the **Disability Rights Education and Defense Fund, Inc.** It's based in Berkeley and helps disabled children and adults fight discrimination so they can go to school, find jobs, and participate fully in their communities. Deputy Director **Mary Lou Breslin** reports that DREDF, like many other organizations, is suffering serious financial distress due to loss of federal funding. She adds that they're about to launch a major fund-raising campaign but need some equipment to do so efficiently—a sheet feeder for envelopes and letter-sized paper for an NEC Spinwriter, a copy of *dBASE* that's compatible with the NorthStar Horizon or Advantage (either the CP/M *dBASE II* or *dBASE III* and software that will make it CP/M compatible), a modem these machines can use, and an IBM PC-compatible computer. All donations are tax deductible, and any help you can give will be greatly appreciated. You can reach Mary Lou at (415) 644-2555, or write for more info: DREDF, 2212 Sixth St., Berkeley, CA 94710.

J.W. Evans of Van Nuys is looking for an **IBM PCjr group** in the San Fernando Valley area. If you can help, drop him a line at 13825 Vanowen St. #12, Van Nuys, CA 91405.

User group news: We enjoyed seeing **Fred Duffy,** president of the **Original Apple Corps,** at the Macworld Expo, and were pleased to receive a letter from OAC Membership Chairman **Rich Rollins** a few days later. Rich says that OAC, the oldest Apple user group, is interested in hearing from old members and prospective new ones from the ranks of Mac and Apple II users. There are currently special interest groups for *AppleWorks,* Telecommunications, Educators, and a new one for Macintosh; the club also offers a newsletter and what Rich modestly terms "the best Apple BBS in Southern California" at (818) 767-3805.

The OAC meets on the second Sunday of the month in the Santa Monica Mall, in the community room on the third floor, at 12 noon. Says Rich: "We are interested in having new owners and old hackers, as well as anyone in between, join in. We have lots to offer, and always want to hear from others who can teach us a thing or two." Interested parties can call Rich at (213) 378-0707, or Fred at (213) 396-5515.

If you've been looking for the **Marin/Sonoma PC Users Group** at the Board of Education building, look no more. **Roy S. Levin** informs us that the meeting site has been changed to the Whistlestop Building, 930 Tamalpais St., San Rafael. Meetings are at 7:30 pm on the last Tuesday of the month. The club offers memberships at $36 per year (which includes the newsletter), a BBS at (415) 927-1216 (300/1200, 8-N-1). If you'd like to know more, call **John Hawkins** at (415) 525-8500.

Mac users in Southern California might be interested in the February meeting of **MacValley,** scheduled for Tuesday, February 17 at 7:30 pm in the cafeteria of Burbank High School, Burbank Blvd. and Third St. in Burbank. According to **Ruth Stever,** our faithful correspondent, the meeting will feature a sneak preview by **Ashton-Tate** of a new Mac product (NOT *dBASE Mac,* she hastens to add). For more info, call Ruth at (818) 848-1277.

Chuck Webb of **Silicon Valley FOG** writes in with an update on the club's activities. The club, he says, welcomes users of all types of CP/M-based micros, and offers the entire FOG software library to its members. "One of the most useful features of each meeting," he continues," is a wide-open ad hoc 'problem-solving clinic'—from helping a newcomer get his genealogy program installed to the best uses for PRESTO—our new RAM-resident notepad/calculator/appointment calendar utility."

Surprisingly, Chuck reports that **Commodore 128** users are conspicuous by their absence, and suggests that owners of these machines stop by and check out "all those free utilities and application programs in the FOG library.

"We are seeing a developing 'second wave' phenomenon: people who purchased CP/M systems (often from prior users) for a single purpose such as word processing, and who are only now discovering spreadsheets, data base managers, and the multitude of other applications available to them. It's giving 'CPM LIVES' a new meaning these days; it's fun to watch that 'Wow!' look come into their eyes."

So if you're inclined to Discover CP/M, give Silicon Valley FOG a call at (408) 371-8699. The club holds two meetings: first Tuesdays, 7:30 pm at the Campbell Public Library, 70 North Central Ave. in Campbell, and third Thursdays at the Saratoga Community Library, 13650 Saratoga Ave. in Saratoga.

Hewlett-Packard aficionados will be interested to learn of the existence of **INTEREX,** the International Association of Hewlett-Packard Computer Users. The club boasts a worldwide membership of nearly 10,000, and acts as an information resource for users of the HP3000, 1000, 9000 and Series 100 computers. It also offers a considerable library of user-contributed software. You can reach INTEREX at (408)738-4848, or by mail at User Services Department, 680 Almanor Ave., Sunnyvale, CA 94086. The group also offers a BBS at (408) 746-0834, supporting 300, 450, and 1200 baud, 8-N-1. It's accessible 24 hours a day.

Bulletin Board Listings, Or, The Social Contract Revisited: Our Los Angeles office has been besieged by calls from the hapless new owner of the phone number of a seemingly-defunct BBS whose listing we'd been running. This is not the way we like to be kept up-to-date on BBS listings. We provide these listings as a free service because, among other things, we find the BBS world useful and exciting, to say nothing of important. However, since clairvoyance isn't our strong suit, we don't know your board is a-way unless you tell us, or some irate caller does. *Please* be responsible, and keep us supplied with current information about your board's status. And many thanks to those who are already doing so.

Among the paragons: **Ardy Leenders** of the **Tax Havens—Offshore BBS,** which specialized in legal income tax avoidance "for the ordinary American individual or small business entity." Alas, the changing tax laws have taken their toll on the BBS—says Ardy: "Please remove this listing—due to changes in the trustee program, it is no longer affordable to any ordinary American." So long, Ardy, and thanks.

And **Derek Vincent** of Tarzana regretfully informs us that his **BAMM-RBBS Tarzana** is no more, after slightly more than a year of existence, over 17,000 calls, and zero system crashes on a completely open board. Now, he says, "I just don't have the time to run the board, and if I can't give it 110% then I don't want to run it. Many people tell me BAMM made a standard for future boards to live up to. If it did, the year and a half I put into BAMM was well worth it. I didn't do it for money (I never even took one donation)—I did it for fun and nothing more."

It's not all bad news, however—**Jim Switz,** who told us last month that his **MEBBS BBS/RCPM** was temporarily out of action while he moved, now reports that it's once again up and running under the new name of **SIGSIG.** The new number of (415) 968-7369, 300/1200/2400, 8-N-1. Everybody's welcome, the board is free, and there's public domain software galore for both CP/M and MS-DOS machines, as well as a public-access message system. So check it out.

That's it for now. Remember, you too can send us up-to-date info on your group or bulletin board, either by filling out the coupon in this issue and sending it to User Group Network, *MicroTimes,* 5951 Canning St., Oakland, CA 94609, or by sending e-mail to **microx** on **The WELL,** (415) 332-6106 or (415) 848-0841 in the East Bay. Thanks, and see you next month. ☐

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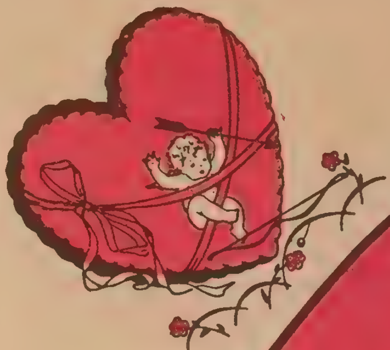

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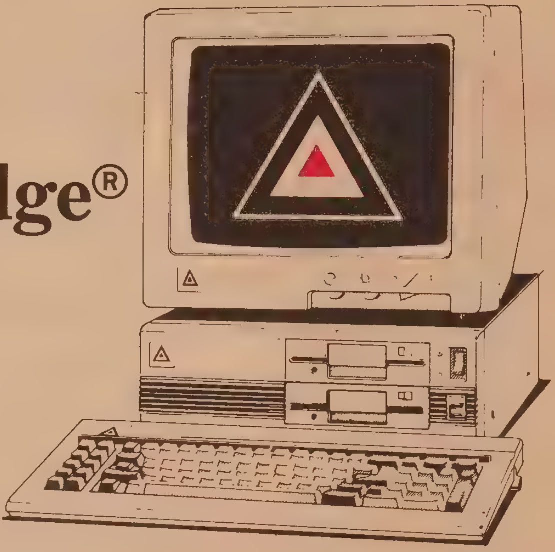

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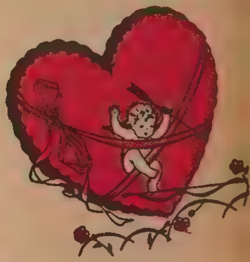

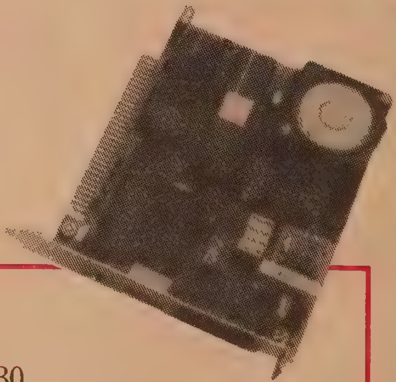

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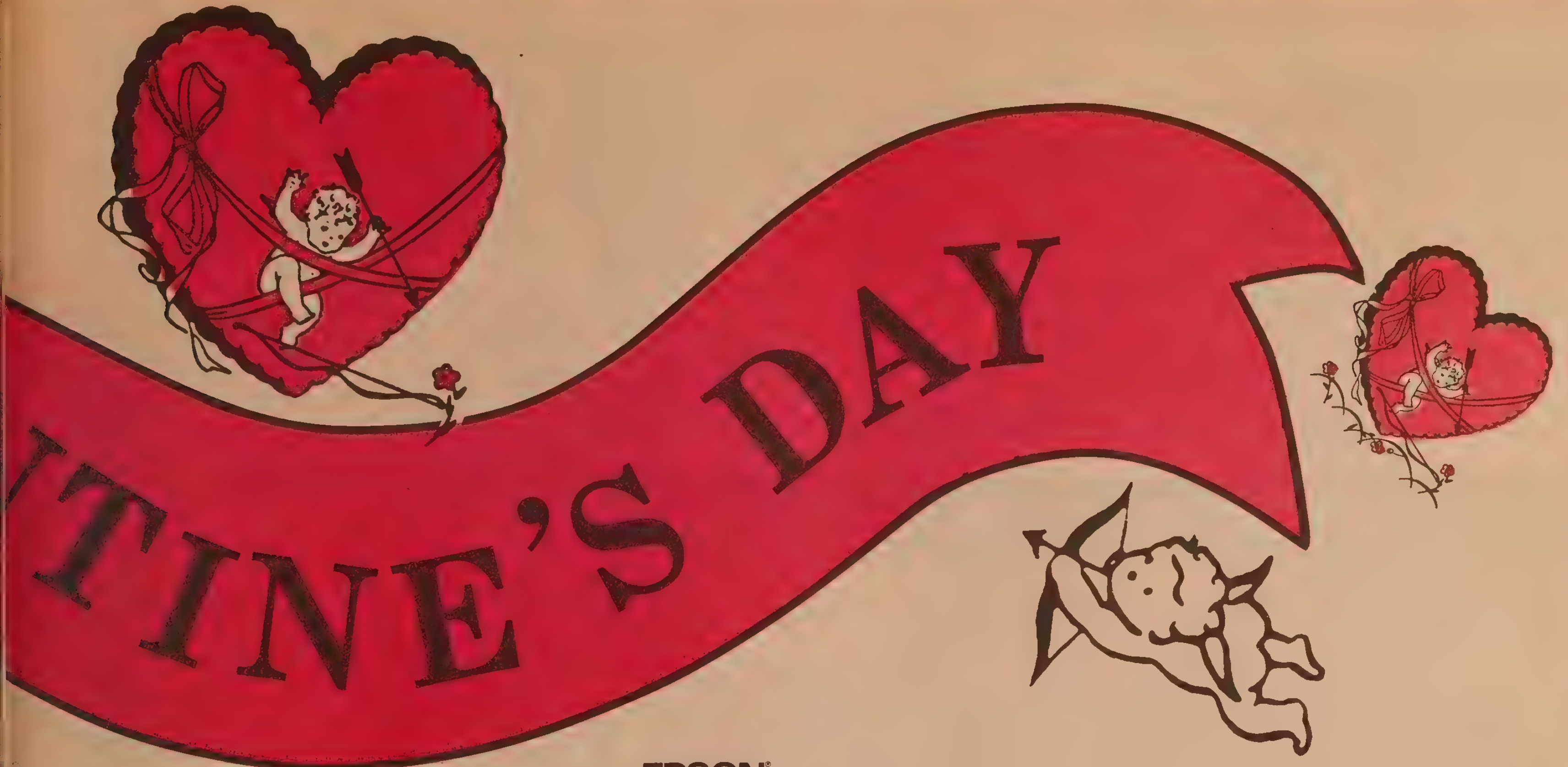

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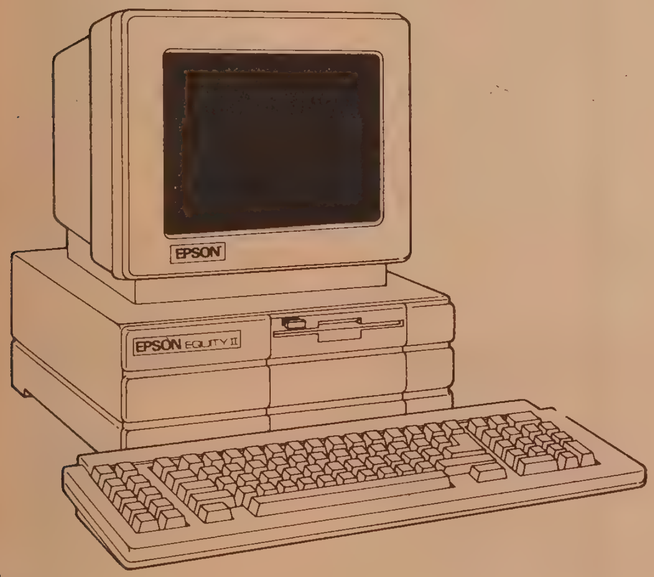

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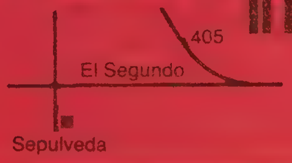

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Region 7 TEC Center BBS. (209) 571-5085. Specializing in music and schools. 24 hrs, 300 baud. Sysop: Dan Guerra.

Inn Finity BBS. (209) 521-6240. Inn Finity is an Atari based BBS. Operates on a 130XE with 320K. Signalman 300/1200/2400 baud, 24 hours a day. ATASCII—ASCII. Sysops Buzz and Jann Kelley.

Bullseye BBS. Stockton, CA. (209) 474-3436. IBM and compatibles. 300/1200 baud. Open 24 hours, 8-N-1. Sysop: Golden Arrow.

The Spotlight BBS. (209) 368-5591. 300 baud, 24 hours, 8-N-1, dual drive Commodore 64 operated. Sysop: The Spot.

213

Gamenet Bulletin Board System. BBS is devoted 100% to gaming subjects. 24 hours, 20 boards, 10 D&D/RPG boards, Alkahest, professional book reviews. Unending Story, Adventurers' Training Ground, Game Hint, etc. Sysop: L.J. Phone: (213) 541-8039.

Aware II (213) 851-0780. Sports BBS with different discussion boards centered around USFL, baseball, etc.

Marina Matchup (213) 397-6300. This Mar Vista-based dating board operates with Martian software.

Lynzie's Motherboard (818) 508-6482/(213) 650-0519. 24 hours, 300/1200/2400 baud, 8-N-1. Private E-mail, download library, dating matchup, interactive chat between users, 4 phone lines on rotary. Public boards include employment, food and restaurant reviews, sci-fi, political, debate, for sale and many more. Monthly social happenings for local users. Sysop: Lynzie Flynn.

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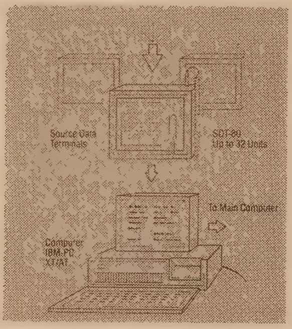

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Evergreen PC Users Group (EPUG-1) (408) 270-4085, San Jose. 8-N-1, 1200/450/300 baud, 24 hours. Sysop Bob Allen. 32 megabytes online, 34 directories created by Special Interest Users.

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415

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ROOTS BBS. Available 24 hours, 7 days a week, supports 300/1200 baud at 8/N/1. Specializes in genealogical info with messages, upload and download of CP/M, DOS, Apple software. Sysop: Brian Mavrogeorge. (415) 584-0697.

Welch Net II. A public FIDO BBS. Message areas devoted to Turbo Pascal programming and Seequa Chameleon computers. Available 23 hours/day. (415) 664-2811.

The General Store Public Domain Programs. Computer industry and computer product information. Hundreds of diverse public domain programs including science, music, education, games, financial, and business programs for the Apple computer. Easy to use. 300 baud, 9 am - 12 pm, (415) 851-4497.

Software First BBS 24 hrs., 300 baud. (415) 459-1544 Marin, (707) 579-1478 Sonoma. 23 message boards restaurant, sales, Amiga, ST, women's forum, reviews, sci-fi, general E-Mail, monthly specials on hardware, software, peripherals.

Bay Connextion BBS (415) 621-7561, 9pm - 9am. 300/1200 baud at 8/W/I. Macintosh Software, Classifieds, Personals, Sexual Freedom, and Star Trek. Claude Wynne, sysop.

Earth-Rite RBBS. We specialize in Earth Religion and related topics. We are not a software exchange. (415) 651-9496. 24 hrs., 300/1200 baud.

MacQueue BBS (415) 661-7374. 100% Macintosh BBS with 8 megs software for download, message base, and Fido-Net Mail (Net 125 Node 2). Instant access, 24 hours, 300/1200/2400 baud. See you on the Q!

MacCircles BBS (415) 484-4412. 24 hours, 300/1200 bps, Mac/Lisa downloads, message base, E-Mail.

Spiritual World. Center for sharing spiritual development. 300/1200, 24 hrs, (415) 366-9033.

Super Resume. A free resume composition system for software engineering and MIS professionals. Produces a detailed, accomplishment - oriented resume. Also the latest weekly FidoNews and FidoList, plus two unique free-form, full-text data base systems available for downloads. No charge. 300/1200, 8, 1, N. 24 hrs. (415) 546-0119 modem, (415) 788-6000 voice.

Co-Ed & Associates. (415) 938-9470. 24 hours, 7 days, 300 / 1200 / 2400. CPM / CPM+ / MS-DOS / Morrow / Zenith / PC and clones. Sysop: Werner L. Gumpert.

Humor & Wisdom. A board dedicated to the exchange of comic relief and things to ponder in a new age of consciousness. Free, as all things should be. 300/1200 baud, (415) 937-2508.

Redwood Color Board. A BBS for the Color Computer user. 300 baud. 7/E/I, 24 hrs., 7 days. (415) 364-2658.

Open Campus BBS (415) 895-0135. Operated by San Leandro High School and Apple Eaters Users Group, 5 meg, 20 message bases plus library. 24 hours, 300/1200. Sysop: Bob Shayler.

Photobytes, a photography oriented BBS, features product information, help files, photo contest listings, plus much more. Sponsored by Wentling Camera Shops. 300 baud, (415) 439-2515, 24 hrs. 7 days.

The Castle BBS. (415) 355-8150, 24 hours. 300-500 baud, 8 bit, 1 stop, no parity. We have 4 message bases, e-mail and UL/DL. CBM oriented but all systems welcome.

Low Overhead BBS. User-friendly BBS, 24 hours, 7 days a week. IBM software, motorcycles and motorcyclists. (415) 763-6794 or (415) 835-9959.

Guideboard, Cabbie's Guide to San Francisco. Where to go for restaurants, doctors, auto repair, etc. The sysop gets his tips from driving a cab; the callers furnish the rest. The BBS also has an resident astrologer, Swami Tommy. The Swami gets his tips from the stars. Ask him any question. (415) 864-3858, 300/1200 baud.

Entrepreneurs BBS: Official BBS for Community Entrepreneurs Organization (CEO), and XT Compatible Club. 1200/300 baud. 24 hours, 20 megs., 8 bits, no parity. Entrepreneurial networking and information, brainstorming, and on-line support for IBM XT clones. Sysop Edwin Rutsch. (415) 552-9070.

APT Action BBS. C64 board dedicated to exploring on-line entertainment. Free ACTION-AUT software. 24 hours, 300 baud, (415) 322-3213.

RSVP BBS. (415) 659-9169, 300/1200, N-8-1. 24 hours. Sysop Jim Thomas. FAUG Amiga User Group discussion and file area, Dr. Who forum, Sanyo, IBM, CP/M files, CP/M forum, Ohlone College forum.

Marin Community BBS (415) 459-3326. 300/1200 baud, 6 pm - 10 am M-S, all day Sunday. 520 ST/Atari information. Sysop Dave Powers.

MacCircles EBBS (415) 484-4412. 24 hours, 300/1200/2400. Running Red Ryder Host software on a Lisa 2/10 (Mac XL). Large software exchange, private mail system, public messaging.

Musician's Network BBS. Musician's information exchange. Space for want ads, bulletins, and public mail. Uploading and downloading available. BBS operates on Fido Software. 8 bits, no parity, 1 stop. Weekends only, 6pm Fri-6am Mon. (415) 893-1618. Sysop: Erik E. Hayles.

520 ST Atari BBS (415) 783-5545, 24 hours, 7 days a week. 300/1200, 8 data bits, 1 stop bit, no parity. Official Sixteen Bit Atari BBS of the San Leandro Computer Club, this system offers full support for all Atari ST system users. Currently running on a ten megabyte hard disk system, the system has many special interest areas including graphics, C, Pascal, LOGO, Basic, MIDI / music, communications and more. Supports four types of XModem/Modem7 and Kermit protocols. Call today! Sysop: Michael Curry.

AutoCAD RBBS (415) 547-5264. 24 hours, 7 days, 300/1200 baud, 40 megs online. Sysop Robert Schultz. Supporting AutoCAD, the world's most widely used PC based design/drafting software. There are 4 megs of AutoCAD drawings plus third party public domain programs that work with AutoCAD (i.e. menus, Autolisp and lisp macro libraries) available to download.

Insight BBS (415) 229-0551. 300/1200 baud, 24 hours, 7 days, 8-N-1. Now running PC-Board on an IBM clone with 20 megs on-line. The board now has 7 conferences and is looking for "message" oriented people who love to talk. There are no status levels, and everyone is invited! Carl Orsi, sysop.

The Precinct BBS (415) 797-2559. 24 hours, 300 baud, telecat II+. Variety of sub-boards, private e-mail and online gaming. Sysop: The Sorceress.

AIDS Information BBS (415) 626-1246. 24 hours, 300/1200 baud. Sysop Ben Gardiner. Free. All welcome. Statistics from Atlanta and San Francisco displayed, updated regularly as received. Sample Q & A about AIDS, based on clinic and phone exchange experience. Mail send/receive on AIDS; please not on other subjects due to limitation of one phone line. Please also no more than one hour per day. Mobilization Against AIDS information here. Calls to this BBS never disturb anyone.

Actrix Enthusiasts RBBS / RCP/M (415) 968-1783. 300/1200 baud, 24 hours, Free. Registration required. 46 megabyte CP/M system. In Mountain View. Sysop: Andy Bajka.

BBS-JC Just Computing. (415) 961-7250, 7E1/8N1. 24 hours/7 days, 300/1200/2400. Amiga and CBM public domain software. If it's new, see it here first! 8 sections including Commodore announcements are currently in operation. This board is especially for "Silicon Valley" Commodore users. Sysops: Thad Floryan and John Cronin.

Bug's Net HP. This bulletin board has over 20MB of PD software available. Message areas include HP300, IBM PC

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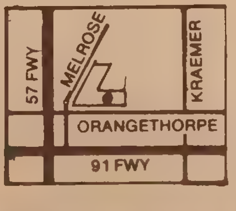

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Professional Software Programmers Association. 830 Bay Avenue, Suite G, Dept. F, Capitola, CA 95010. A 24 hour service and support bulletin board for computer professionals. (408) 462-2829. 8 bit, no parity, 300/1200/2400 baud. No fees. Product reviews, professional job registry and consulting registry services. Ask for copy of the Association's free monthly newsletter and membership information packet.

A.M.U.L.E.T. II: Inform-Serve. (415) 989-5054, 24 hours, 7 days, 300/1200 baud. 95+ subboards, on-line gaming and many RPGs, 52 MB of on-line storage. Sysops: The Starmaster/Magician Merlin.

L'Expres! (415) 538-6340. Atari, 300 baud, 9pm-6am daily. Runs BBS: Express! software. Sysop: Greg Manubay.

The Dead Knight's Tavern. (415) 364-6877. Fantasy role-playing bulletin board system. 24 hours at 300 baud. NO FEE. System Overlord: Shane White a.k.a. Samuel-Kline.

MicahLink. Free, 24 ours, 7 day private BBS for Mac users. Sponsored by Micah, Inc. Online support, discussions, directory of MicahDrive dealers. (415) 771-1119 modem, (415) 331-6422 voice.

The Pirate's Hollow BBS. 24 hours, 300 baud. Ye Cap'n: The Atari Pirate. (415) 593-6784.

Draco-Net Prime. (415) 474-8608, 300/1200. Official BBS for: A+ Magazine, International Apple Core, San Francisco Apple Core, Apple Three Users of Northern California, and Carrier.™ 24 hours, no fee. Leonard Reed and Jono Smith, Sysops.

Recovery BBS. (415) 621-5206. If you are in a 12 step recovery program, or think you have a problem with alcohol or drugs, or if you are compulsive about eating, smoking, or sex and love, call. Share your experience, strength and hope in message sections that include AA, NA, CA, OA, SA, SLAA and Alanon/CA. There are meeting listings in the file areas.

Cat's Tail Mega-System. (415) 349-TAIL (349-8245). All welcome. Nearly 100 public message forums, both computer- and non-computer-related subjects. Five on-line games, public domain file transfers for IBM, Apple, CP/M. Running on Apple IIGS. 300/1200, 24 hours.

Family Radio Forum. (415) 562-5483. 300/1200/2400, N-8-1, 24 hours. Download, upload, message, conference on parenting. For teens, singles and clones. Christian RBBS for everybody. Sysop: Richard Yim (voice 415/568-6200). Also (301) 261-1423 (Annapolis, MD), (712) 246-2115 (Shenandoah, IA), (916) 481-6320 (Sacramento, CA).

POPnet Berkeley. (415) 527-4510. 24 hours, 300/1200 baud. 15 lines of fun and games for all. Chat, CB channels, games with others. Mail and bulletin boards, of course. Not free, but cheap.

Vaudeville Local. (415) 337-8693. 24 hours, 8-N-1, 300/1200. Vaudeville Local is a BBS dedicated to vaudeville and circus arts. Sysop: Arthur Conway.

Crossroads BBS. (415) 968-9341. 300/1200 baud, 8 bits, no parity. 24 hour operation. File transfer for IBM/compatibles, Commodore 64. Message bases include space travel, singles, political dissent, sexual freedom, stories, poetry, musician's referral, programmer's corner, adventure gaming. No fee. Mike Macgirvin, sysop.

LaserWriter BBS. (415) 261-4813. 300/1200 baud, 24 hours. BBS dedicated to desktop publishing. Sysop answers all related questions. Located within Allen Computer Graphics, desktop publishing specialists. Files, messaging, user groups, e-mail. Upload direct for LaserWriter printout or to order other products offered by Allen Computer Graphics. Macintosh and other computers welcome. Sysop: Tom Allen.

The Players Club Network. (415) 771-2051. 7-E-1, 300 baud, M-F 24 hours. Devoted entirely to the performing arts. Job info, news, monologues, games, quotes, and more. Operated by Committee for National Theatre Week.

The Records Department. (415) 426-0470. User registration required. Public domain and shareware programs available for download at 300/1200/2400 baud. Caters to IBM; also Apple, Commodore, Atari. Large, friendly discussion section with something for everybody; games, voting booth, technical help. Bill McCauley, sysop.

SFCAL RCP/M. For Adam users. Berkeley, CA. 300/1200 baud, (415) 549-3378. Sysop: Robert Baker.

Silicon Valley Computer Society BBS. (415) 968-6891, 300/1200, 24 hours. Sysop: Herb Shear.

Computer Adventure Center, C.A.C. 24 hours daily, 300-2400 baud, in Fremont. No fees, IBM based but open to all callers. New BBS#: (415) 490-7365. Sysop: Al Demar.

Breakthrough Software BBS. Support for TimeLine users. (415) 892-0408, 300/1200/2400 baud, 8-N-1. XMODEM or Kermit protocols. 7 days, 24 hours.

EBMUG BBS. Running 24 hours a day, 300/1200, 8-N-1 at (415) 848-2609. Private mail system, public messages, Macintosh software.

KAY+FUN RCP/M. (415) 572-8219. MS-DOS, CP/M, modems, business applications (e.g. *dBASE, Lotus, Reflex*, Wordproc). General discussion of commercial and public domain software. Also public domain and private file transfers and more. FREE online registration. 300/1200/2400. Sysop: Ernest Hintz. Sponsored by KAYFUN users group.

Programmer's Circle. (415) 239-1722. 8-N-1, 300/1200, weekdays 3 pm-11pm. The Programmer's Circle specializes in carrying source code and tools to aid the programmer. Special attention is given to the Macintosh and Apple II computers, but all computer users are welcomed. Data files are online for the Mac and Apple II computers. Sysop: Roger Gibby.

The Live Wire. (415) 540-0529. 300/1200, 24 hours. A digital magazine for the graphic-arts community (printers, typesetters, self-publishers, artists). Free. Sysop: Rick Hepting.

SIGSIG BBS/RCP (formerly MEBBS) is back online! Member of the FOG and PRACSA networks. Supporting CP/M and MS-DOS public domain software and a public-access message system. No fees, novices welcome. Online registration for FOG, PICONET and PRACSA members. 24 hours, 300/1200/2400 baud. Sysop: Jim Switz. Located in Mountain View. (415) 968-7369. Call today!

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The Far Side. (415) 471-1138. 300 baud, Tele-Cat II+, 24 hours.

Machiavelli Interface. (415) 659-1168. 8-N-1, 24 hours, 7 days, 300/1200. IBM and compatible PC board with Net-Mail feature. 30+ megs of downloads, conferences. Sysop: Dewayne Mikkelson.

Cold Moon On A Single Star. (415) 668-6101, San Francisco. 24 hours, Fido board. Chinese culture, history, language, Chinese cooking, discussion, etc. Asian community events. Sysops: Joseph Puig and Susan Chen.

Dr. Don's TBBS. (415) 885-1973, San Francisco. 300/1200, 24 hours. CarTalk and SportsTalk discussion and special interest boards. Private e-mail. All automobile sportscar enthusiasts, sports fans, softball-baseball-football players are invited to call. Sysop: Dr. Don. Co-sysop: Bimmer Pilot.

Centerville RBBS. (415) 793-3037. 300/1200/2400 baud, E-7-1 or N-8-1, 24 hours daily. Sysop: Joe Halbleib.

The Board. (415) 652-8277. 1200/2400 baud, 8-N-1, 24 hours. Public and private conferences, technical support. For AT&T and compatibles; AT&T PC support conferences. Associated with Bay Area AT&T PC6300 Users' Group. Sysop: Troy Blackburn.

Attitude Adjustment. (415) 939-1639. 8/N/1, 24 hours, 7 days, 300 baud. Call today and get your Attitude adjusted...just for fun. If you have an Attitude and want to tell people about it, you know where to call. Small but growing system: 8 message bases, private e-mail, voting, textfiles and a few downloads. Emphasis is on interaction between Adjusters on the message bases. Sysop: Rick Adjuster.

Dial-Your-Match #341 in Hayward. (415) 489-2572. 24 hours, 7 days, 300/1200 baud, no charge. Sysop: The Matchmaker.

Yet Another BBS. (415) 689-8952. 8-N-1, 300/1200, 24 hours, 7 days. Upload/download, entire public domain library of "The Ulternate Source." All makes of software, message base, e-mail. Friendly sysops! Jim and Alex Stewart.

Track 3 BBS. (415) 540-7570, 300/1200 baud, 24 hours, Berkeley. for railfans, roller coaster enthusiasts, transit issues, and the like. Sysop: Robert Parks.

Infolinc RBBS. (415) 672-9270. 8-N-1, 300/1200/2400 baud, over 500 files online, conferences, doors, online chat with other users. Special private line for supporting users, running PC Board 11/6/E, 24 hrs. Sysop: John Palmer.

DYM #56. (415) 964-3255. 8-N-1. 24 hours, 300 baud. Features user match function and e-mail, five message boards including Public, User Activities, The Flea Market (Buy/Sell/Trade) and two Adults Only boards. No fee required, but online registration is required. Sysop: Velvet 150.

Palladin BBS. (415) 332-1655. 1200 baud, 8-N-1, 7 days, 24 hours. Sysop: Al Kalian.

The DeskTop Publisher. (415) 856-2771. 300/1200/2400 baud, 24 hours, 7 days. Dedicated to desktop publishing, with particular emphasis on the use of DOS based hardware and software. Upload / download / messages/conferences. Anyone interested welcome. No fee. Registration required for full participation. Sysop: Freeman Bradford.

The Nimitz DownPort. (415) 276-3677. 8-N-1, 24 hours, 7 days, 300/1200 baud. The Nimitz DownPort offers a wide variety of message bases including Adult. With a BBS that has parties, educational offerings, discussions with nationally- and locally-known "geniuses" and experts, and "hands-on" role-playing games, there is no reason not to dock here. Call today and be a part of tomorrow. Sysops: Lady Godiva and Portmaster Kevin Munrow.

Marin-Sonoma PC Users Group BBS. (415) 927-1216. 300/1200 baud, 8-N-1. Sysop: Howard Leistner.

California ConneXion Partyline. (415) 927-2739. An adult oriented multi-user, multi-interest system featuring matchmaking, 12 public message boards, on-line chat with other users, questionnaires and more! Very fast operating system. 7 meg system. Currently operating with 3 lines—more lines to be added soon. 8-N-1, 300/1200/222400, 24 hours, multi-line system on rotary. Sysop: Alan.

Impeesa's Path. (415) 582-4863. 1200/2400, 8-N-1, 24 hours. Focused on outdoor activities. Conferences on camping, hiking, fishing and hunting, photography, Boy Scout activities. Also features "Doors," supports graphics. Sysop: Ed Reardon.

619

Ramona BBS. (619) 789-6235. 24 hours, 300/1200 baud, C128, C64, Amiga, Atari, IBM, CP/M. P.O. Box 373, Ramona, CA 92065. Sysop: Digiteer.

Sysware BBS. 24 hours, 300/1200 baud, (619) 278-8661. Commodore machines only. Sysop: Don Malette.

The Nassau XPress. (619) 433-XPRS. 8-N-1, 300 baud, 24 hours. An information and entertainment BBS with 11 message bases including electronics, amateur radio, computer news, music, adventure games, BBS review. Full access is granted to long distance callers with same day validation for new users. UL/DL available using XModem or Punter. Private e-mail, text files, online games and utilities. Sysop: Dan Wright.

702

Public Domain Software Interest Group. (702) 794-3665. 24 hours, 300/1200/2400 baud, 8-N-1. Public domain software available for downloading, message board, and user supported donations of software. Sysop: T. Heisserman.

707

Napa Valley RBBS / RCP / M (707) 257-6502. Interests in Atari, Apple, Osborne, dBase II.

Survival Communication Forum. Fido 125/7. Focusing on preparedness and self-sufficiency. Multiple message and file areas. A MedNet member system featuring weekly CDC reports, medical text and news files. Open to all. 23 hours daily, 300/1200 (707) 545-0746. Don C. Kulha, Sysop.

R.A.G. (Redwood Atari Group) BBS. 300/1200, 24 hrs. (707) 539-8889. Sysop: Bill Marlin.

STATE BBS ST and 8 bit Atari. Supports all Atari computers. On line surveys, public domain software, discussion and a built in adventure game (if you can find it). 300/1200 baud, 24 hours a day, full duplex. Sysop: Mikkel Lawrence. (707) 585-2194.

Softy's BBS. (707) 437-4334. 24 hours, 8N1, full, 300/1200. An Apple BBS with a technical theme. We have boards for IBM as well. Retail store advertising with discounts for users of this BBS. John Hagen, sysop.

UNIBLAB BBS. (707) 422-1669, 8-N-1, 24 hrs. 300/1200 baud. Community-oriented BBS. On-line games, SIGs, XMODEM protocol, no fee. Sysop: Ben Harris.

Sigma BBS. (707) 274-8561. Call this BBS for the best IBM-PC/compatible RBBS in the Redwood Empire. Over 650 downloadable programs. We feature "Doors" software for your adventure playing moods and Tradewars II, a multi-player galactic challenge. Tradewars can support up to 70 players and features sector movements and planet creation. We also support the latest in RBBS-PC Bulletin Board Software, Procomm communication with utilities software and many other programs. 24 hours, 300/1200/2400, 8-n-1. 72 minutes allowed daily. Sysop: Randy Sun.

Valley of the Moon BBS. (707) 996-7922. 24 hours, 7 days. 300 baud. Free Primarily set up for Radio Shack and COCO II, but all are welcome. Come join us. Sysop: Wes Ford.

714

The Consultant's Exchange BBS Serving professional computer consultants and students since 1983 with the finest public domain software for the IBM-PC. Featuring consultants list and job list. (714) 842-6348 24 hours.

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Environet. (714) 731-6439, 300 /1200, no parity, 8 bits, 1 stop bit. David Salahi, sysop. The online source of information and contacts for the environmental community. To log on, use user id 105, password PARKS.

El Toro RBBS/RCPM. (714) 855-0672. 24 hrs. 7 days/week. 300 / 1200 / 2400 baud. No charge, open access, no registration. Specialize in ZCPR3 and CP/M PD utilities. Sections for AMPRO, SB180, dBase II, TPascal, Modula-2, Wordstar, ZCPR3, modems, SIGM and utilities. Over 3000 programs in 88 megabytes online. Public E-mail system. Easy to use ROS system. The collection point for Modula-2 in So. Calif.

K-WEST. (714) 646-3060. 8-N-1, CP/M and DOS. 24 hours, 300/1200/2400. Sysop: Peggy Lloyd.

The Byte Zone BBS. 7 days, 24 hours, 300/1200 baud. Serves all Tandy computers and many others, including MS-DOS. Features adventure help files, electronic mail, message bases and download menu. Sysop: Franco Collino. (714) 639-3566.

Easy On of Moreno Valley. (714) 924-4324. Offering 65 meg of public domain (5000 files) for IBM and CP/M operating systems—Kaypro 10 networked. 2nd biggest library in California, with a local network in Newport Beach and across continental USA. BBS offering private one-on-one tutoring to endusers. Leave msg. for sysop if not available—we return your message and try to assist you. 24 hrs, 7 days, 300/1200/2400. Sysop: Al Cobb.

CMC Computer Systems. (714) 835-0910. Information boards: Apple II, Apple III, Laser 128, IBM, Buy/Sell, hard disks. 300/1200 baud, 24 hours. Sysop: Charles F. McConathy.

Amiga-Line. (714) 772-4097. 24 hours, 300/1200 baud. 100% Amiga for Orange County. Sections for graphics, sound, BASIC, ROM kernel, C, Hardware and Games. Sysop: Tom Jacobsen.

Diamond Bar BBS. (714) 861-7268. 8-0-1, full duplex. 24 hours, 365 days. Sysop: Albert E. Ray, Ph.D.

The WOCCUG Board. Operated by West Orange County Commodore User Group. EBBS, 8-N-1, 24 hrs, 300/1200. (714) 772-4182. Sysop: Mark Stanford.

The Buckeye BBS. (714) 821-0589. C64, Punter, Xmodem, 300/1200 baud, 24 hours. Sysop: Art Collins.

FBBS. (714) 823-3673. 24 hrs., 300/1200 baud, full duplex. 50 megabyte system based in Fontana. Downloads for Commodore, Amiga, IBM, Atari, Apple, CP/M. 17 active message bases, weekly online magazine. Sysop: Larry Krzewinski.

GameNet. (714) 520-4263, 24 hours, 300 baud, multiuser board. This Orange County based system features interactive games, a chat area, and an online mail section. Sysop: Merlin or Patches.

Bits and Pieces Times BPT-#. (714) 630-5619. 300/1200, No parity, full duplex. 9 pm-9 am. Sysop: John Callaci; sub Mike Dalton.

Software Exchange. (714) 552-3515. 300/1200/2400, 24 hours, 7 days, 8-N-1. Specializing in public domain and shareware for IBM and compatibles. Over 2000 programs in 42 megabytes on line. Features include private and public message bases, conferences and online help and menu screens. No charge, but you must register. Sysop: John Coon.

C-TUG BBS. (714) 458-1288. Punter protocol, 24 hours, 300/1200 baud. Sysop: Les Gertz.

77-Amiga. (714) 77-AMIGA. 300/1200 baud, 24 hours, 40 meg. drive. Sysop: Al Cheser.

717

The Dead Board (717) 677-9573, 24 hrs., 8 bit word, 1 stop bit, no parity, 300/1200 baud. Grateful Dead tape trading and info; space for bulletins, ads and public mail.

805

Thousand Oaks Technical (805) 493-1495. This massive 64 megabyte board has a mind-boggling number of downloadable programs. The board has no bulletin board feature and allows unlimited upload time. Download time is limited depending on upload exchange.

KERNCOM. (805) 322-8800. 300/1200/2400 baud, 24 hours, 7 days. KERNCOM has operated continuously since March 1983 for the IBM community. KERNCOM is owned by the Kern Independent PC Users Group and is never off line except for routine maintenance. Sysops: Rick Heming and Jim Harrer.

CCCUG BBS. Central Coast Commodore Users Group. (805) 934-2216. 24 hrs/7 days, 300 baud, Punter BBS protocol for downloads. Sysop: Greg Johnson.

PC Vision. (805) 487-3149. 300/1200, 8-N-1, 40 megs. PC-, MS-DOS programs. Sysop: Frank Driscoll.

Tech-Talk. (805) 922-5488. 300/2400 baud, 24 hrs. 21 meg pd software on a 63 meg system. Online registration, instant access to all files, MS/PC-DOS, CP/M. Sysop: Jerry D. Russell. Public access "Collie ver. 1.2."

CompuLink Fido. (805) 494-3350, 300/1200/2400 baud, 24 ours except during netmail. Huge selection of ham radio files; other features include echomail, Outside, and role-playing games (StarTrek, Gamma World, Champions, AD&D, more!!). 20 megs—call today! Sysop: Eric Daymo.

Mustang WILDCAT! BBS. (805) 399-1887. Bakersfield, CA 300/1200/2400/9600 baud. 24 hours, 7 days. This board serves as the development home for the WILDCAT! Bulletin Board System written for the IBM PC. Free access to over 40 megs of download files on your first call. The message section supports conferences in Turbo Pascal, PC Utilities, WILDCAT! updates, electronic stock reports, and many others. Sysop: Jim Harrer.

Affection Connection. (805) 527-7464. 24 hrs., 7 days, 300/1200 baud. Multi-user BBS offering live on-line chatting, matchmaking. Sysop: Devin Woods.

818

Granada Engineering Group RCP/M (818) 360-5053. Technical information, BBS lists, and help on CP/M assembly language program writing.

Oracle BBS (818) 980-6743, system password MICROTIMES, is a multi-interest, multi-user BBS running 6 phone lines on a CompuPro. Features include 8K messages, comments on messages, match-maker, adult material section, online CHAT between users and much more. 24 hr., 300/1200 baud.

The Agency BBS. 300 baud. Free. All systems welcome. 16 message bases, large data base of over 100 files on various subjects. Special areas for special interests such as gaming, business programs, and MIDI (Musical Instrument Digital Interface). 24 hours. (818) 794-5001.

The Audiophile Network. A databoard system for the music lover and audiophile. Information, specifications, prices and the latest news about hi-end stereo components. 24 hours, 7 days, unless down for repair. (818) 988-0452. (818) 782-1676 (voice) for info.

Speak Easy BBS. 300/1200 baud, runs on an IBM-AT with 26 megabytes. UL/DL with Xmodem, games, 20 message bases, dating service (questionnaire), voting booth. All computers invited! (818) 905-6262.

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Warren Communications Network. TI BBS, 24 hours, 300/1200 baud, graphics, speech, downloads. Sysop Douglas Davis. (818) 361-9294.

The Hotline Operated by Video Take-Out; callers worldwide. Online orders, The Newsletter, Newsbytes, Hits (records, tapes, CDs, European music). The system is free, easy to use, 24 hours, 7 days, 300/1200/2400. 8-N-1. (818) 766-6442.

Party & News Line. Chat with other live users by modem! Read the latest computer news provided by BBS Press. Use your modem and call (818) 842-3322 now! 300 baud.

Lynzie's Motherboard (818) 508-6482/(213) 650-0519. 24 hours, 300/1200/2400 baud, 8-N-1. Private E-mail, download library, dating matchup, interactive chat between users, 4 phone lines on rotary. Public boards include emkployment, food and restaurant reviews, sci-fi, political, debate, for sale and many more. Monthly social hyappenings for local users. Sysop: Lynzie Flynn.

Commodore 128 Dial-Your-Match BBS (818) 842-6900. 300 /1200. The ORIGINAL Matchmaker. Sysop: Gregg E. Collins.

Light Artists, LTD. (818) 985-0541. 24 hrs, 300/1200/2400 baud. Sysops: Marty and Gerald Lehtola.

The Mogur's EMS. (818) 366-1238. Private and public e-mail, 20 special interest group message sections, 8 database sections, 27 megabytes, upload/download with xmodem, open to all systems, operating systems and users. Numerous unique and innovative features using custom software. In operation since 5/1/81. Multiuser with two lines, 2400/1200/300 baud, 8-1-N. Sysop: Tom Tcimpidis.

The Dugout. (818) 248-0562. Operates at 300 baud on a TI-99/4A but welcomes all systems. Includes message base, computer events, on-line adventure, xmodem d/l, and more. 6pm-11pm daily. Sysop: Jim Edwards.

The Talk Channel. (818) 506-0620. 24 hours, 300/1200. Sysop: Gary Clarkson. A multi-user, multi-interest system featuring chat on-line with other users. 20 public message boards, including movie previews, casting calls, dining tips, debate and dating boards. 4 questionnaires, one that you answer in your own words, 3 optional. Extremely fast operation on 22 meg hard disk drives.

LAACE (Los Angeles Atari Computer Enthusiasts). (818) 348-8644. 24 hour, 300/1200 baud, 10 meg online.

The Californian. (818) 368-7497. 300 baud, 24 hours. Color Bulletin Board System runs 24 hours a day, 7 days a week. Dedicated to the TRS-80 Color Computer, but other computers welcome. 9 sub-boards, more soon. No fees; only rule—no attempts to crash the system. Sysop: Jay B. Sanders.

Wizard of Osz RBBS. (818) 709-6978. 300/1200/2400, 24 hrs., CP/M or MS-DOS. Sysop: Mat Satuloff.

Atari Resource Magazine (ARM) (818) 446-5813. 24 hrs., 300 / 1200. Currently serving Atari and IBM computer users. Eleven message bases: general chatter, hangouts, advertise, for sale, XE Atari, ST Atari, modem, ul/dl, other BBS #s, Bible, job board. Sysops: Bob and Kim Reynolds.

RBBS (Bondwell SIG). (818) 787-0156. 300/1200 baud, CP/M and MS-DOS, 24 hours, 7 days. Everyone welcome. No time limit. Instant access to downloads. Files available for PC compatibles, Bondwell models 2 through 36. Hardware notes and tips. New product discussions. Sysop: Jon L. Bek.

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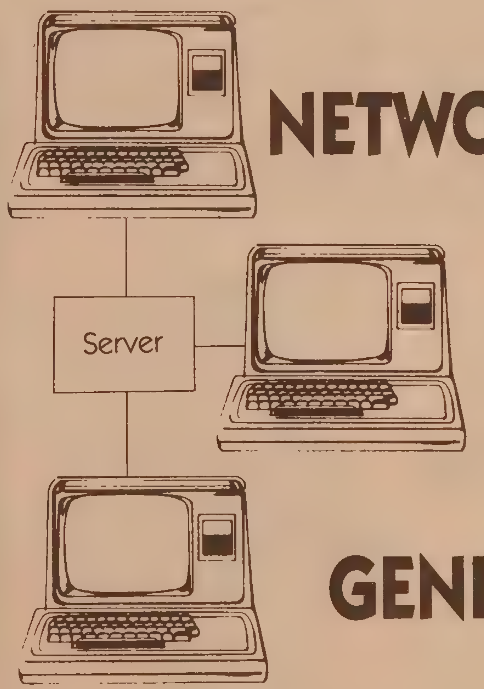

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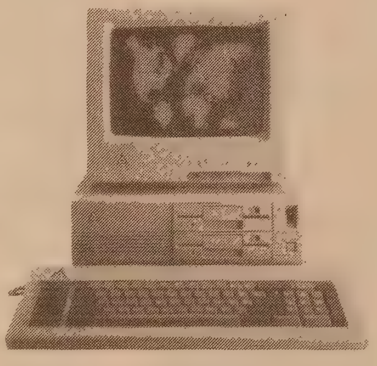

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Dodge City. (818) 241-4401. 24 hours, 300 baud, soon 1200. Great downloads that change every day. Sysop: The Sheriff.

The MacLodge BBS. (818) 444-9850. 8-N-1, 40 megs, 300/1200/2400. Hours M-F 3:30 pm-7 am; 24 hours on weekends and holidays. Macintosh up/downloads, plus Mac info. Mac users only please. Sysop: Dennis Cosio.

Greycastle BBS. (818) 796-5042. The bulletin board of the San Gabriel Valley Macintosh Users' Group. Operates 24 hours per day at 300 or 1200 baud. 5 megabytes available for 8 subboards, XModem file transfers on SnAPP software. Sysop: Bryan Menell, CompuServe ID 72307,2100, GEnie ID B.MENELL.

The Outpost RCP/M. (818) 353-8891, 300/1200 baud, 24 hours. Online games, occult and general text files, CP/M, Turbo Pascal. Sysop: Phil Hansford.

AT&T PC6300 Users' Group BBS. (818) 954-0530. 300/1200 baud, 8-N-1, 24 hours. Only So-Cal BBS "officially supported" by AT&T. Sysop: Eric L. Levinson.

Infotronics Computers BBS. (818) 282-7094, 300/1200 baud, 10 am-7 pm Mon-Sat, Sunday 12-5. 20 meg online. Message bases and file transfers for Macintosh (or Atari ST with Mac emulator), IBM (or Atari ST with IBM emulator) and even the Atari ST computers! (All computers are welcome.) We need users! No fee and plenty of elbow room—give us a call. Running on MichTron BBS software for Atari ST.

Fantasy Plaza BBS. (818) 840-8066. 300 baud. You will be impressed!

The LEDGE PC Board. (818) 352-3620, 8-N-1. 300/1200/2400. Offers full support for Leading Edge Model D and all MS-DOS machines. Other systems are welcome. Online software reviews from Computer Entertainer. Large library of MS-DOS programs available for download. Free to public. Instant online registration gives full system access. Sysop: Joseph Sheppard.

AMP PC-RBBS. (818) 570-4406. 300/1200, 8-N-1, 24 hours. For IBM, program downloads and uploads, personal mail, public message system, 40 megs, no fee. New open sale conference for free for sale or wanted ads. Computer products offered at low price. Sysop: Edward Lee.

916

The Vortex BBS. (916) 481-0194. 24 hours, 300/1200 baud. Online and RPG games, new ones start often. Message boards include private mail, Dr. Who, game hints, endless story, play by mail. Vote on movies and weekly survey. Articles and BBS listings. No Fee. Register first call. Pamela Lunsford, sysop.

"The Meeting Place" BBS 300/1200/2400 baud. 24 hours, no parity. AE line for public domain downloads. Apple, Commodore, IBM programs available for download. Numerous general files. No fees, all free. Call (916) 662-1838. Woodland, CA.

Family Radio Forum. (916) 481-6320. Christian RBBS for everybody.

SAC TIBBS. (916) 927-3012. 24 hrs, 300/1200 baud, X-modem downloads, graphics, speech. Free. Sysop: Woody Large.

The Devil's Domain BBS. (916) 268-1127. 8-N-1, 24 hours, 300/1200/2400 baud. 4 sub-boards including main, music, jokes/war, and elite. Up/downloading. General files. Voting topics, online gaming. A BBS devoted to have fun! Sysop: Asmodeus.

NATIONAL/ INTERNATIONAL

Network Users Association. 2111 Eisenhower Ave., Suite 400, Alexandria, VA 22314. (800) 638-8510 or (703) 683-8500.

TPUG World's largest Commodore Users Group. $25 annual membership entitles you to access to library of public domain software for C-64, VIC 20, PET, CBM, SuperPET, B-128. Coming soon Plus 4, C-16, C-128. New disks added each month. Also TPUG Magazine (10 per year), free access to TPUG's Bulletin Board Modem System, 24 hours, 7 days. TPUG Inc., 1912A Avenue Rd., Suite 1, Toronto, Canada M5M4A1.

Apple Co-op. 290 SW 43rd, Renton, WA 98055. (201) 251-5222.

JUG (Jefferson State Computer Users Group). Many SIGs, newsletter. Dues $5.00 year, some SIGs additional. Contact JUG, P.O. Box 457, Gold Hill, OR 97525-0457.

MicroPro Users Group of America. National group with over 200 members worldwide. Dedicated to supporting MicroPro products, especially WordStar and InfoStar, for any hardware. c/o Procyon Associates, 140 Riverside Drive, New York, NY 10024. (212) 595-4811.

Franklin Users Group International. Supporting users of II, II+, Franklins, and all compatibles. We support all members with a monthly newsletter, "The Clone Ace," a growing public domain library and personal attention. Membership $20.00 a year. Contact Douglas M. Trueman, EastWind Apt. L77, Tecumseh, MO 65760.

Golden Apple Club, Apple II and Macintosh. Contact Stefano Minotto, Golden Apple Club, Riviera Tiso da Camposanpiero, 26, 35100 Padua, Italy.

F.O.G. 15,000 member group supporting all CP/M users. Dues of $24.00/yr. include 60-80 pg. FOGHORN monthly's access to 270+ disk library, 40+ RCP/M systems, and back issues; and a technical support hotline. All meetings conducted by 140+ local groups. Gale P. Rhoades, P.O. Box 3474, Daly City, CA 94015, (415) 755-2000.

Getec s.r.l. Contact Silvio Esengrini, Via dei Guarneri Nr. 24,-20141 Milan, Italy. Phone: 39/2/5696502, 39/21 5694185.

Italtel S.p.a. Contact Michelangello Sala, C.Na, Castelletto, 20090 Settimo Milanese, Milan, Italy. Phone 39-2-4388-4288.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

KAPPA (Memphis Kaypro Users Group). Meetings at 2 pm, 1st Saturday of the month, Room 2, Jennings Hall. Contact Hugh Lamar, 5983 Macon Cove, Memphis, TN. (901) 377-4140.

The AppleWorks Users Group (TAWUG). c/o Regional Rep, 27421 Berenda Way, Hayward, CA 94544, (415) 887-7499.

FORTH Interest Group, International Office. P.O. Box 8231, San Jose, CA 95155. For further information call (408) 277-0668.

Apricot User Group (APRICUG). Box 98, Malverne, NY 11565.

Spellbinder Users' Group has an international newsletter with useful macros written by members, advice on new applications, news, and word-processing problem solving. All experience levels. California members welcome. Write P.O. Box 14, Newark, Notts, England NG24 4TP; telephone (0636) 77313; telecom Gold/Dialcom Mailbox 72: MAG95610.

AstroSoft for the IBM PC. Promotes the use of software in astronomy and related sciences; disseminates astronomical information from databases and software. P.O. Box 4451, Hayward, CA 94540-4451.

National TeleVideo Users Group. Meets 7:30 pm, 3rd Thursday, 1170 Morse Ave., Sunnyvale. P.O. Box 22007, San Francisco, CA 94122. Call for info—David, (415) 753-1552.

Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

Golden Apple Club, Apple II and Macintosh. Contact Stefano Minotto, Golden Apple Club, Riviera Tiso da Camposanpiero, 26, 35100 Padua, Italy.

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National TeleVideo Users Group. Meets 7:30 pm, 3rd Thursday, 1170 Morse Ave., Sunnyvale. P.O. Box 22007, San Francisco, CA 94122. Call for info—David, (415) 753-1552.

Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

ASSOCIATIONS

Computer Professionals for Social Responsibility. The LA chapter is interested in computer reliability and preventing nuclear war, the socially useful direction of computer research, and similar topics. They meet most third Wednesdays at 7:30 pm at varying locations. Contact Rodney Hoffman, P.O. Box 66038, Los Angeles, CA 90066, (213) 932-1913 for more information.

Organization of Professionals, Educators, and Novices (OPEN). Tutorials, random access period, feature presentation, public domain library, and CP/M literature are all part of the monthly meetings of Osborne owners/users and MS-DOS transportables. Club BBS and newsletter. Call Frank L. Christ at (213) 498-4186 for more information. Meetings at Learning Assistance Center, CSU Long Beach, 3rd Wednesdays, 7 pm.

The North Orange County Computer Club. This group is the largest and perhaps the oldest in the county. It is affiliated with a large number of special interest groups and offers something for just about every user. General meetings are usually the first Sunday of every month in the Hashinger Auditorium, Chapman College, Orange. For info, call (714) 998-8080.

The South Orange County Computer Club. A general computer club that meets the first Tuesday of every month at 3545 Harbor Blvd., Costa Mesa. Meetings begin at 7:00 P.M.

Valley Computer Club. Monthly meeting at 7 pm, first Wednesday of month in Burbank Board of Realtors Bldg., 2006 W. Magnolia Blvd., Burbank. All types of micros represented. Contact W.R. Robinson, 11850 Louise, Granada Hills, CA 91344, (818) 368-1383.

INTERFACE is a Los Angeles area gay and lesbian computer users' group for socializing and exchanging information. Meetings are open to all, regardless of level of experience. There are no dues or membership requirements. For additional information call Jim (213) 664-1127 or Pam (818) 368-0437.

San Diego Computer Society. Umbrella organization for over 40 Special Interest Groups (SIGs). Sponsors meetings, newsletters and annual computer fair. Meetings at Mesa College, 7250 Mesa College Drive, San Diego, 11:30-4, third Saturday each month. Contact Membership Chairman, P.O. Box 81444, San Diego 92138, (619) 549-3783. BBS (619) 549-3788.

Consolidated Computer Club. Meets first Fridays. 7 pm, Progressive Savings Bank, 12175 Ventura Blvd., Studio City, CA. Dues $25 yr. Send SASE to David Nussbaum, 11558 Riverside Dr., #207, North Hollywood, CA 91602.

Professional Typists/Word Processors Network to meet Sept. 9, 7 pm at Santa Monica Montessori School, 1619 20th St., Santa Monica. Network was formed for homebased typists and word processors to share information and referrals. Meetings consist of outside speaker and networking. $2 per meeting. Contact Fran Brevig, 6399 Wilshire Blvd. #1A, Los Angeles, 90048, (213) 651-1479.

Hughes Aircraft Computer Clubs. This club is for Hughes Aircraft employees only, but the BBS is open to everyone. Upload and download boards for Macintosh, IBM, Atari, Commodore, etc. Each board has its own public message service plus general message board. Contact Bud Grove, 21111 Dolores #146, Carson, CA 90745. BBS (213) 549-9640, 300/1200 baud, 24 hrs., 7 days.

Ventura Personal Computer User's Group. All MS-DOS and PC-DOS machines. Meetings 3rd Saturday 9 am-12 noon, Foster Library, 651 E. Main, Ventura. Contact Mike Regan, President, 301 Dana Point, Ventura, CA 93004, (805) 647-8273.

Micro User's Group — SFV Board of Realtors. Meetings 7232 Balboa Blvd., Van Nuys, 7 pm. third Thursday. Contact Mary Lou Williams, (818) 786-2110 for more information.

South Bay Computer Education Group. Supporting Apple, Atari, Commodore, IBM and compatibles, and TI99/4A. Meeting 2nd Wednesday of each month. Time 7 pm at 3675 Torrance Blvd., Suite 202, Torrance, CA 90503. Contact Jack Ward (213) 530-4879 or Judy Adams (213) 540-5010.

UCLA PC Users Group. IBM PC or compatibles owners welcome to join us on the 2nd Tuesday of the month, 7 pm. Public domain library , SIGs, BBS, seminars and newsletters. NPI Auditorium, UCLA, Westwood Plaza, Level C. For more information call (213) 473-6668.

Citizens Veto. For users with an interest in socio-economic issues who might want to try their equipment in working a model of a new approach. Primarily graphics and numbers, minimal text. Ewald O. Schlachter, (415)452-0151.

USER GROUPS

AT&T

Would like to start an AT&T 6300 Users Group. Orange County - Riverside. Contact Chuck Patten, c/o 2144 Michelson Dr., Irvine, CA 92715, (714) 851-0119.

AT&T PC6300 Users' Group. Meetings at various locations—contact BBS for latest information. Or write Eric Levinson, P.O. Box 7364, Burbank, CA 91510. BBS (818) 954-0530, 300/1200, 8-N-1, 24 hours.

ADAM

Adam Users of Southern California. Come and keep the ADAM going. We have access to some of the people who developed software for ADAM and we are going to create a base for tips, reviews, and a BBS. Get on line with ADAM. Meetings at Airport College Center, Sepulveda and Century, 4th Sunday, noon. Contact Harvey Klein, 1736 S. Bedford, LA, (213) 553-1062 or Paul Shecter, 5545 Lindley, Tarzana.

ALPHAGRAPHICS

Alphagraphics. Contact Stella or Jim Muller, 16425 Bernardo Ctr. Dr., San Diego, Ca. 92128, (619) 451-2250.

AMIGA

Amiga Users Group. A chance to meet and talk with other local Amiga users, review software, and exchange public domain software. Meetings 7:30 p.m., 1st Tuesday. Call Roy Wagner, (714) 892-5500 for more info.

Amiga Friends-Amiga Association of Southern California. Meetings at 12 pm on the third Sunday of the month in the Orange County area. Contact Al Cheser at (714) 635-2100 for more information.

South (LA) County Amiga Users Group. A chance to meet and talk with other Amiga owners. Software reviews and public domain library. Meets at Mid Cities Bank in Bellflower on Lakewood Blvd., just south of 91 freeway, on 1st Tuesday at 7:30. Call Roy Wagner at (213) 832-3361 x4689 for more info.

San Fernando Valley Amiga User Group. Meets 1st Thursday, 6:30-9 pm, Valley Federal Savings, Reseda and Nordhoff. Membership $25/yr. Disk of the month, p.d. library, demos, SIGs, newsletter, answers! Contact Al DiPaolo, president, (818) 786-8624.

Bits & Pieces Amiga Group of Anaheim. Meets every Tuesday 6:30-10 pm at 1130-A N. Kraemer Blvd., Anaheim, CA 92806. C-64, C-128, Amiga. Public domain software, technical help, guest speakers, much more. Contact John Callaci or Mike Dalton (714) 630-8644/630-8711 for information.

Color America. Amiga SIG meets 1-3 pm on the third Saturday of the month at Rosemead Community Center, 3936 N. Muscatel Ave., Rosemead. For information contact Mark Randall, 2227 Canyon Rd., Arcadia, CA 91006, (818) 355-6111.

APPLE

Original Apple Corps. First Apple group ever. SIGs for AppleWorks, Telecommunications, Educators, Macintosh. Meetings in the Santa Monica Mall, second Sunday of the month, 3rd floor Community room, 12 noon. Contact Rich Rollons (213) 378-0707, or Fred Duffy, (213) 396-5515.

The Orange Apple Computer Club meets 9 am-12 pm the first Saturday of each month in the Science Hall at Orange Coast College, Costa Mesa. We have over 700 members, ranging from beginners to certified Apple developers, and a large Apple II public domain software library. There are several very active special interest groups which include Apple III, educators, Apple II, modem and investors. For further info call (714) 770-1865.

South Bay Apple III User Group. Over 85 Apple III users share information, programs, group purchases, product demos. Special interest groups meet 1st Tuesdays. General meetings on IIIrd Tuesdays at 7:30 p.m., UCLA Harbor General Hospital, Room III. Corner of Vermont and Carson, off 110 Fwy. Contact Gary Fortune, P.O. Box 432, Redondo Beach, CA 90277, (213) 316-7738.

Tri City Apple User's Group (Glendale, Burbank, Pasadena). New group formed from merger of Pasadena and Wabash groups. Meetings are scheduled the third Thursday of the month at Casa Colina Neurological Learning Center, 50 North Hill St., Pasadena at 7:30 pm. Contact Marie Kaden at (818) 846-6682. Dues $12./yr.

North San Diego Apple Club. Meets 1st Tuesday of each month at Meadowbrook Middle School, Meadowbrook Lane, Poway, 7 pm. Contact Bill Walker (619) 579-9649 or Chuck Newby (619) 566-0387, P.O. Box 75, Poway, CA 92064.

SD Alliers. Want to start Apple III user group in San Diego area. Contact James Fair, P.O. Box 1592, Lakeside 92040, (619) 561-3270.

Applejacks of the Inland Empire. Primarily for Apple II users. Meets first Wednesday and third Thursday of the month, 7-9 pm, at Norman Feldheym Central Library, 555 W. 6th St., San Bernardino. Contact Scott Zehm at (714)883-2234 for information, or write Applejacks, P.O. Box 23025, San Bernardino, CA 92406.

APRICOT

Apricot Roundtable Group of Hapless Hackers (ARGHH!) An Apricot user's group is forming in east Long Beach, open to any Apricot, XI, F1, F2, F10 or FP user, or anyone else with MS- or PC-DOS and 3½" disk drives. Phone Jim Bliss at (213) 425-6302. Meetings 7–10 pm, 3rd Wednesdays or at such other time as membership decides, at 7215 Killdee St., Long Beach, CA 90808.

ASHTON-TATE

dBUG-dBASE Users Group. For all levels of dBase users from beginners to expert. Meets 3rd Monday each month, 7-9 pm, Blue Cross Bldg., 21555 Oxnard, Woodland Hills. For more info contact Bruce Ascough, (818) 789-0723.

dBASE III SIG of UCLA PC Users Group. Meets once per month in Santa Monica—date varies. Contact Tom Rombouts, 1428 N. Curson #6, LA, CA 90046, (213) 874-7471.

ATARI

Atari Computer Association of Orange County (ACAOC). Join one of the biggest Atari user groups in Southern California. Monthly magazine, large public domain library, and club BBS. Dues $24.00/year, $18.00 for non-attending out-of-town members. Meetings at Golden West College, Room 131, Huntington Beach, 1 pm, fourth Sunday of the month (ST meeting same time and place on second Sunday). P.O. Box 9419, Fountain Valley, CA 92728 or (714) 838-3099 for more information.

West LA Atari Users Group. Come join fellow Atarians! Dues are $20.00/year. Newsletter, P/D library, ATR-Sig, discounts, guest speakers. Please call for directions to meeting room! If you're reading this, you belong with us. Meetings first Wednesday of the month, 7 pm, Paul Revere Jr. H.S., 1450 Allenford Dr., Brentwood. Call John Scheid, pres., for more information (213) 829-7239.

Los Angeles Atari Computer Enthusiasts (LAACE). Join Los Angeles' largest and oldest

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Atari Users' Group, now in our 6th year. Enjoy our monthly meetings and newsletter. Participate in our educational SIG (Special Interest Groups) seminars and meetings. Learn how to get the most out of your Atari; access our hundreds of public domain programs; benefit from the help and experience available from our experts. Come as our guest on the 1st Tuesdays of the month (2nd Tues if holiday occurs in 1st week) at 7:00 pm at Granada Hills High School, 10535 Zelzah Ave., Granada Hills, CA. For full benefits, including member access to our 10 meg BBS, dues are $20/yr ($25 for entire family). Write P.O. Box 7752, Van Nuys, CA 91409 (include your phone number) for additional information.

Santa Clarita Valley Atari Computer Enthusiasts (SCV-ACE) invite you to join us. Meetings are the first Thursday every month from 7 to 9 pm at the Moose Lodge, 18000 W. Sierra Hwy., (1/2 mile north of Soledad Canyon Road), Canyon Country. For info call Bob at (805) 259-6540.

Atari Computer Enthusiasts Network (ACENET). Umbrella group representing many Southern California Atari groups. If you can't locate a user group in your area, contact John Tarpinian at 6055 Cahuenga Blvd., #2, North Hollywood, CA 91606, (818) 760-1831.

Hooked on Atari Computer Keyboard Society (HACKS). Meetings on the first Saturday of the month in the Burbank area. For more information contact John Tarpinian, 6055 Cahuenga Blvd., #2, North Hollywood, CA 91606, (818) 760-1831.

AA-Atari Users Group. Meets at Upland Public Library, 450 N. Euclid Ave. Atari 400, 800, XL/XE group meets second Tuesday, 6-9 pm. Call Juan Valdes, (714) 980-6841 for more info. 520/1040ST group meets fourth Thursday 6-9 pm. Call Jay McCarthy, (714) 829-8722 for more information.

MAST—Mid-Cities Atari ST. Meetings at 9025 E. Artesia Blvd., Bellflower, first Sunday, 7 pm. Contact Jane Hughes, 9701 E. Artesia Blvd., Bellflower, (213) 867-0626.

South Bay Atari Computer Enthusiasts (S.B.A.C.E.). Meets 2nd Tuesdays, 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita. Meetings consist of guest speakers from software and hardware suppliers, demos by members, q & a periods, along with current Atari rumors. Newsletter, published 6 times a year, included with $20/yr membership fee. Write S.B.A.C.E., P.O. Box 83668, Los Angeles, CA 90083, for more information, or call Dick Reaser, (213) 645-7063.

AUTOCAD

AutoCAD Los Angeles Users Group. Meetings fourth Thursday of the month (except November and December—Meetings Nov. 20 and Dec. 18), Church of Religious Science, 260 North Pass Ave, Burbank. Contact Tesfaye Abagaz, (818) 843-5770 (work).

COMMODORE

Club 64 National user group. Monthly newsletter, BBS, group purchasing, public domain software, much more. Contact: Robert Johnson, (213) 925-4049.

San Diego Commodore Users Group. Meets third Wednesday, 7 pm, 2557 3rd Ave. (Women's Club), San Diego. For all Commodore machines. Contact Jane Campbell, (619) 584-2872 for more information, or write: P.O. Box 86531, San Diego, CA 92138-6531.

San Fernando Valley Commodore Users Group. Meets second Wednesday of the month at Patrick Henry Junior High on Louise Ave. between Devonshire and San Jose in Granada Hills, near 118/405 freeway interchange. Contact Tom Lynch, 21208 Nashville, Chatsworth, CA 91311, (818) 709-4736.

San Luis Obispo Commodore Computer Club 1766 9th St., Los Osos, CA 93402. (805) 528-7475 BBS.

The Commodore Users Group - San Juan Capistrano. This group of C64 users meets the second Saturday of every month from 9:00 am till 12:00 at Great American Federal Savings and Loan, 32232 Camino Capo, San Juan Capistrano. For info call 496-5745.

Orange County Commodore Technical User's Group C-TUG. Orange County's Commodore user group. Club newsletter, two 300/1200 baud BBSs, door prizes, SIGs in Comal, DOS protection, data bases, wpros, and BASIC. Custom software and ROM chips, and just plain good times. Meetings at Mercury Savings and Loan, 4th and Newport, Tustin, fourth Sunday of the month, 10:30 am. Contact Ellis L. Higham, corresponding secretary, P.O. Box 8342, Orange, CA 92664, (714) 554-9222.

Hollywood User Group (HUG) for Commodore computers. Meets 2nd Saturday of the month at Plummer Park, Conference Room, 7377 Santa Monica Blvd., West LA at 12 noon. Contact HUG BBS (213) 874-8256 (24 hrs) or write HUG, P.O. Box 38313, Hollywood, CA 90038.

Southern California 64 Users Group. Learn more about your Commodore 64. Extensive public domain disk library. Meet at Mid Cities Bank in Gemco shopping center on Bellflower, just south of 91 Freeway, 7 pm, 3rd Tuesday of every month. Contact Joe Allain, 3852 Riverton, Studio City, CA 91604, (818) 985-2647.

C-128 West UG. User group for owners of the Commodore C128, from beginner to advanced; PD software available. New group still assessing the needs and interests of members. Intend to network with other user groups on C128 software. Meetings 2nd Tuesday, 7:15 pm, McKinley School in Santa Monica, Santa Monica Blvd. and Chelsea. Contact Don Campbell (213) 828-9308.

Inland Empire IBM/C64 User Group. Major subjects are local area networks, small business software, data communications. Send SASE for free newsletter with dates and software library. Contact Winfried Hofacker, P.O. Box 988, Chino Ca 91708-0988.

Commodore Creations Users Group (CCUG). We offer library, newsletter, and other services; upcoming BBS; soon to be member of Commodore World. Meets 2nd or 3rd Sunday of each month 2-4 pm. Membership dues $26 per year. Call or write for info: Brian R. Klotz, 1135 Coronet Ave., Pasadena, CA 91107 (818) 351-8198.

Back-Country Commodore Club. Meets first Thursday 7 pm, Ramona Lutheran Church on 14th St. Check us out for relaxed, informative group discussions. We're here to help those with problems and to promote better uses of Commodore 64s, 128s, and Amigas. Contact Gerry White at (619) 789-3209, 511 14th St. #D-13/P.O. Box 373, Ramona, CA 92065. Meetings at 617 16th St., Ramona, CA 92065, 7 pm, 1st Thursday each month.

General Dynamics Commodore Computer Club. Meets third Tuesdays, 4:30 pm, Convair Rec. Assn. room C. Commodore 64 and 128 only. Contact Al Wilson, (619) 429-6790 for information.

C.U.B.E. Commodore Users, Buffs, and Enthusiasts meet first and third Mondays of each month, 7:30 pm, East Side Christian Church, 668 Obispo, Long Beach. Contact Lynn Cothern, 2005 Palo Verde #163, Long Beach, (213) 421-1041 modem.

Com-Pacs. Meetings and/or copies of public domain software and discussion of problems. New computer C64/128 technologies. Sales and swaps of equipment. Meetings at 2354 Elmgrove St. Los Angeles, CA, Saturdays, 3 pm. Contact Lon Damiani, (213) 222-2277.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

Pacific Computer Club (Commodore). Meetings 391 S. Madison, Pasadena, 2nd Thursday, 7 pm. Contact Norman Sauppe, (818) 792-9840.

FCUG/SixtyFourum. PD library, newlsetter, meeting 3rd Saturdays, 8:30 am. Contact George Bearden, P.O. Box 16098, Fresno, CA 93755, (209) 291-7053. BBS (209) 431-6288.

Central Coast Commodore Users Group. Meets 3rd Tuesday of each month. Contact Gilbert Vela, 4237 Plumeria Ct., Santa Maria, CA 93455. CCCUG BBS (805) 934-2216, 24 hrs/7 days, 300 baud, Punter BBS protocol for downloads.

Diamond Bar User Group (DBUG). The Diamond Bar User Group is dedicated to the Commodore line of computers, C64, C128, and the Amiga. The club has a large public domain software library base, especially Commodore CP/M. Free raffles, technical discussions, software demonstrations, and the monthly freebie disk can be found at most any meeting Meetings 2nd and 4th Wednesdays, 7 pm, Diamond Bar Library, 1061 S. Grand Ave., Diamond Bar, CA. Contact David Dietzel, (714) 947-1882 for more information.

South Orange County Commodore Programmers and Users (CPU). Meetings at Great American Savings, 23688 El Toro Road, El Toro, third Saturdays, 9 am. Contact Don Gribble, President, 25401 Champlain Rd., Laguna Hills, CA 92653, (714) 830-2430 or (714) 855-8320.

West Orange County Commodore User Group. Meetings 1st Sundays, 1 pm, Mercury Savings, Buena Park, corner of Valley View and Lincoln. Write for info: P.O. Box 6441, Buena Park, CA 90622; or call Mark Stanford, (714) 772-4182 or Art Collins (714) 821-0195.

Bits & Pieces Amiga Group of Anaheim. Meets every Tues-day 6:30-10 pm at 1130-A N. Kraemer Blvd., Anaheim, CA 92806. C-64, C-128, Amiga. Public domain software, technical help, guest speakers, much more. Contact John Callaci or Mike Dalton (714) 630-8644/630-8711 for information.

The Pasadena Commodore Computer Club meets the first and third Wednesday of the month at 7 pm in the Circadian Room of the cafeteria on the campus of Pasadena City Col-lege, SE corner of Colorado and Hill. For more information write to PCCC, P.O. Box 1163, Arcadia, CA 91006, or call (818) 447-2212 after 2:30 Pacific time.

CORDATA

Cordata Users Group. Meets 2nd Fridays, 7 pm. 20630 Lassen St., Chatsworth. Contact Alicia Fahey, (818) 709-6202 for information.

DEC

DECUS Inland Empire PC-LUG Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software /applications assistance available; FIDO bulletin board. Meets Cal Poly-Pomona campus, Library Bldg15, Room 12, 7:30 pm 3rd Tuesday of each month. Contact Jan Snyder, 380 Verona St., Upland, CA 91786, (714) 620-7511 ext. 4376.

DECUS Southern California PC-LUG. Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software/applications assistance available; FIDO bulletin board. Meets 10:30 am, 1st Saturday of the month, Press Telegram Bldg., 3rd Floor, 604 Pine Ave., Long Beach, CA. Contact Bill

Davis, 1457 W. 219th St., Torrance, CA 90501. (213) 827-4600.

DECUS Rainbow Pacific PC-LUG Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software /applications assistance available; FIDO bulletin board. Meetings at Digital Equipment Corporation, 6101 W. Centinela Ave., Culver City, CA 90230, 7 pm, 2nd Wednesday of each month. Contact Don Braums, 3312 Summertime Lane, Culver City, CA 90230, (213) 202-1784.

EASYBUSINESS

Easybusiness Systems Users Group. CPAs, Consultants, and other business people interested in Computer Associates Easybusiness Systems' Accounting Software. For information, contact Gary Robinson (213) 398-6544.

EPSON

Cursor Club Epson 402 W. Arrow Highway, Suite 6, San Dimas, CA 91773. (714) 559-8361, Bulletin Board: (714) 592-6316.

San Fernando Valley Epson User Group. Meetings at Fallbrook Square Community Room "The Meeting Place" off the Food Court in the new Fallbrook Mall, 6633 Fallbrook Ave., Canoga Park, between Victory and Vanowen. Meets 3rd Wednesday of each month at 7 pm. Contact Pat Denslow, (818) 881-4029 for information.

Epson Users Group of Orange County. 6075 Jeffrey Mark St., Cypress, CA 90630, (213) 414-4817.

Epson Users of San Diego. P.O. Box 87448, San Diego, CA 92138, (619) 560-7604.

High Desert Epson Users Group. 933 Cottonwood Drive, Barstow, CA 92311, (619) 256-3541.

PSC/QX. 2934 Wilshire Blvd., Santa Monica, CA 90403, (213) 453-4535, Bulletin Board: (213) 474-4952.

South Bay Epson Users Group. 1115 Cerise Avenue, Torrance, CA 90503, (213) 328-9916, Bulletin Board: (213) 618-1940.

Epson Computer Club of America. Monthly meeting 2nd Saturday of the month at 10 am, Mercury Savings and Loan, Irvine Blvd. one block east of Newport Ave. Messages Epson West Bulletin Board (714) 630-7104 User area B:15. Monthly newsletter "The Help Key." Contact Roy Boorman, 4021 Winterhaven St., Yorba Linda CA 92686, (714) 524-9483.

TUG-NET Epson SIG meets 2nd Wednesdays, 7 pm, Mercury Savings, 5201 Laurel Canyon Road, North Hollywood. Call (818) 705-6300 for information.

FORTH

FORTH Interest Group, Los Angeles Chapter. Meets 4th Saturday, 10 am, Hawthorne Public Library, 12700 S. Grevillea, Hawthorne. Contact Phil Wasson (213) 649-1428.

FORTH Interest Group, Orange County Chapter. Meets 1st and 4th Wednesdays, 7 pm. Call Noshir Jesung for info. (714) 842-3032.

FORTH Interest Group, San Diego Chapter. Meets weekly, Thurs., 12 noon, contact Guy Kelly (619) 268-3100 ext. 4784.

HEATH

Los Angeles HUG (Heath Users Group). A support group for users of Heath/Zenith computers. Monthly speakers, software library, information exchange, newsletter. Meetings open to visitors. Meetings at 2309 S. Flower St., LA 90007, first Thursday of each month at 7 pm. Call Tom Davis for information at (213) 462-2642.

HEWLETT-PACKARD

Club of Hewlett - Packard Hand-Held Users (CHHU). HP handheld users worldwide support CHHU as a noncommercial, open, independent club dedicated to applying today's machines and making a contribution to the true personal computer of tomorrow. Send SASE for more info to Richard J. Nelson, 2545 W. Camden Place, Santa Ana, CA 92704, or call (714) 754-7757 for meeting directions.

LA-SCRUG. Hewlett - Packard Series 100 business computer user group. Demonstrations and seminars on HP software and equipment. Meetings at 5161 Lankershim Blvd., North Hollywood, 7-9 pm, 2nd or 3rd Thursday of the month. Contact Dave Mark, P.O. Box 60975, Pasadena, CA 91106, (818) 794-4969.

IBM

The Greater South Bay IBM PC Users Association. Any L.A. area PC or compatible owners are welcome to attend these meetings at the TRW cafeteria on Compton Blvd. Meeting time is 7:00 pm on the third Thursday of each month. For info call (213) 398-8153.

Technical Users Group (TUG-NET). For CP/M & MS-DOS PC users. Meets on the first Thursday of each month at 7:00 pm. Valley Plaza Park, Community Room, 12240 Archwood St., North Hollywood, CA. Contact Mike Faith - (818) 994-6567. DOS SIG meets 3rd Mondays, 7 pm, Sears S&L, Van Nuys. Call (818) 701-0512 for information. BBS (818) 882-6045.

UCLA PC Users Group. IBM PC or compatibles owners welcome to join us on the 2nd Tuesday of the month, 7 pm. Public domain library , SIGs, BBS, seminars and newsletters. NPI Auditorium, UCLA, Westwood Plaza, Level C. For more information call (213) 473-6668.

Pasadena IBM User's Group. Meets 3rd Wednesday of each month at Cal Tech, Steele Building, Room 102. For more info send SASE to Steve Bass, 711 E. Walnut Street #306, Pasadena, CA 91101, (818) 795-2300.

Inland Empire IBM/C64 User Group. Major subjects are local area networks, small business software, data communications. Send SASE for free newsletter with dates and software library. Contact Winfried Hofacker, P.O. Box 988, Chino Ca 91708-0988.

The Foothill Computer Club. An IBM-PC users group. CCCUG — Crescenta-Canada-Compatible Users Group. P.O. Box 1265, La Canada, CA 91011, (818) 790-6672. Meetings 1st Wednesday of the month at 6:30 pm at the Glendale Federal Bank, 2350 Honolulu, Montrose, CA. For newsletter send SASE to above address.

NOCCC Lotus & Business SIG. Subgroup of North Orange County Computer Club. Meets first Sundays at Chapman College in Orange, CA, 11:15 am. Lotus 1-2-3 and business application demos, speakers. Call to verify dates, address: Vance Joachim, (714) 998-8080. P.O. Box 3616, Orange, CA 92665.

The Riverside IBM Computer Club. Meetings at Computerland Riverside, Monday 7 pm. We specialize in software demonstrations, sharing of public domain programs, and mutual problem solving activities. Contact Jimmie E. Heidecke, (714) 685-5407 for info.

Orange Coast IBM PC User Group. A not-for-profit organization open to anyone with or considering the purchase of an IBM PC or compatible computer. Monthly meetings, usually on the last Saturday of the month, consist of one or two guest speakers, a short business session and a period for random access. OCIPUG has public domain and user supported software, a monthly newsletter and a bulletin board. Membership is $20 per year. Meetings at Orange Coast College, Science Hall, Costa Mesa, last Saturday of the month, 9 am–12 noon. Contact Tom Sutro, P.O. Box 6100-211, Costa Mesa, CA 92628, (714) 850-0474.

Valley Computer Club. IBM PC Users Group meets first Wednesday each month. The group is part of Southern California's original computer club. Its purpose is to distribute public domain software and exchange info on the PC. Meetings at 2006 W. Magnolia Blvd., Burbank, 7 pm. Contact Sy Lieberman, (818) 981-9593.

Kern Independent PC User Group (KIPUG). Meets the 2nd Thursday of each month beginning at 7 pm at the County Superintendent of Schools Boardroom, 5801 Sundale Ave., Bakersfield. Contact Jim Harrer, P.O. Box 2780, Bakersfield, CA 93303, (805) 395-0223.

Bits & Pieces IBM of Orange County. Meets at 1130-A N. Kraemer Blvd., Anaheim, every Saturday at 10 am. Call John, (714) 630-8644 for more information.

Ventura Personal Computer User's Group. All MS-DOS and PC-DOS machines. Meetings 3rd Saturday 9 am-12 noon, Foster Library, 651 E. Main, Ventura. contact Mike Regan, President, 301 Dana Point, Ventura, CA 93004, (805) 647-8273.

Thousand Oaks Personal Computer Club (TOPCC). Meets fourth Thursday, except November and December (3rd Thursday), at Home Federal Savings, 164 W. Hillcrest Dr., Thousand Oaks—6:30 pm beginners, 7:30 regulars. Group is five years old and has approximately 150 members. Contact Bob Tracy, (805) 482-7092 for more information.

Southwest PC Users Group. All computer users are welcome. Meetings 3rd Saturday of each month; call for meeting place. Christine Tripp, (213) 935-4105.

Tulare County PC. Meetings at Genesis Computers, 3rd Thursday each month. Call Roger Jenan, (209) 733-8204 for information.

KAYPRO

Lakewood/Long Beach KUG is a group of Kaypro computer owners dedicated to helping each other solve problems and share information and public domain software. The meeting is open to all. Meetings at Midcities Bank, 9025 Artesia, Bellflower, CA, 2nd Wednesday of each month; 7 p.m. Contact Melvin Pasley, 4566 Shadeway Rd., Lakewood, CA 90713, (213) 421-3094.

Kaypro UG, 3134 N. Palm Shields, Fresno, CA 93704.

K-West, Orange County Kaypro users group. Meetings 2nd Monday of the month, Glendale Federal Savings, 100 Newport Center Drive, Newport Beach.

Club 16. Meets once a month in Costa Mesa at 2790 Harbor Blvd., (CBS Store) to share knowledge of the 16 bit world. It is a small group so that everyone can get to know each other and share. Large public domain library. Contact Peggy Lloyd, (714) 645-9868 for information.

LA Kaypro Users' Group. Meets 3rd Tuesday, 6:30-9:30, Beverly Hills High School, 241 Moreno Ave., Room 125, near Olympic and Spalding. Contact Allyn Franklin or Barry Cole, (213) 278-3748 or (213) 390-3851.

Kayos Kaypro Users Group. Kayos Kaypro User Group invites Kaypro and CP/M users to meetings at TRW in Redondo Beach, 6:30 pm, third Monday of the month. (213) 379-8339 for details.

TUG-NET Kaypro and Osborne SIG meets 4th Thursdays, 7 pm, Central Savings, 4464 Van Nuys Blvd., Sherman Oaks. Call (818) 882-1693 for information.

LEADING EDGE

Leading Edge User's Group. A user's group of predominantly Leading Edge users and other similar machines with high clock speed. Public domain software, demos of software/hardware. No fees. Meetings 7:00 pm, 2nd Wednesday of the month, 12792 Valley View, Suite F, Garden Grove, Contact Bruce Fruchter, (714) 891-2001 for information.

LOTUS

Los Angeles Lotus Users Group. Demonstrations, problem-solving, third-party applications, etc. For Lotus 1-2-3

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and Symphony. Informal and fun. 7–9 pm, Burbank church of Religious Science, 3rd Thursday each month. Take 134E to Pass, N. 1 block. Call Don Roark, President, (818) 905-1441 for information.

MACINTOSH

Los Angeles Macintosh Group (LAMG) Membership fee is $25/yr or $15/yr for students. Membership includes 12 issues of MACDIGEST newsletter, access to public domain library, BBS, discounts at local stores. Join the largest Mac group in So Cal with over 500 members. Meetings at Madison Elementary School, 11th and Arizona Ave., Santa Monica, 3rd Thursday of the month. Call for meeting info: Eric Anderson, 12021 Wilshire Blvd., #349, LA, (213) 392-5697.

Ventura County Macintosh Club Mac and Lisa users invited. Membership $21/yr.; newsletter, software library, discussions and ideas. P.O. Box 7754, Oxnard, CA 93031, (805) 983-1610, (805) 499-2824.

Mac Valley Users Group. For $20/yr. membership fee you too can enjoy meetings chock full of software/hardware presentations, public domain software library, Mac articles index, software and accessory raffles, and help hotline. Broad range of users, very friendly to novices. Meetings at Burbank High School Cafeteria, Burbank Blvd. at 3rd St., Burbank, CA, third Tuesday of the month, 7:30 p.m. Contact Ruth Stever, P.O. Box 4297, Burbank, Ca 91503, (818) 848-1277.

MAC-HACers. Macintosh computer club for Hughes Aircraft employees only. Meetings 3rd Wed. each month, H.E.S.E.A. Club House, 1216 Imperial, El Segundo, CA 90745, across from LAX, 5 pm. Contact Bud Grove, (213) 606-2212, 5am-3pm, (213) 549-9664.

Orange Apple Macintosh Group. The Macintosh Meeting of the Orange Apple Computer Club meets 1 pm-4 pm the 1st Saturday of each month in the Science Hall at Orange Coast College, Costa Mesa. We have the best of the public domain software for the Mac, and several fun special interest groups which include Fast Start, Mac Modem, and Deciphering Mac Public Domain. For further info, call (714) 770-1865.

Mac Orange. Bi-monthly newsletter, monthly meetings, largest Macintosh user group in Orange County (400+ members). $20 annual dues. Meetings Johnson Center, Santa Ana College, 3rd Wed. Contact Taylor Barcroft, P.O. Box 2178, Huntington Beach, CA 92647, (714) 842-0518 for info.

MacBuddhist. Learn about computer assisted dharma study and application to daily living. Network of on-line Bodhisattvas sharing material crossing sectarian lines. Monthly meetings, last Saturday of the month. Contact secretary, College of Buddhist Studies, 933 South New Hampshire, Los Angeles, CA (213) 739-1270.

Corporate User Groups SIG of Los Angeles Macintosh User Group establishes communication between leaders of Macintosh User Groups of companies in the greater Los Angeles area. The main purpose of the group is to share information on Macintosh use in corporations. It also consults company recreation clubs in starting and supporting company Macintosh groups. Contact Charles Shipp, (213) 970-6300w, (213) 833-9186h, for more information.

San Gabriel Valley Mac Users Group. Meets once a month to disseminate information about the Macintosh. Meetings are held on the first Thursday of every month at the City of Hope in Duarte, 7:30 pm in cafeteria complex Room B. The SGVMUG has special interest groups such as Power Users' SIG and a Novice SIG. Public domain library, monthly newsletter. Membership is $20 per year. Contact Frank Chavez on the 24 hour information line (213) MUG-ICON, or write SGVMUG, P.O. Box 792, Sierra Madre, CA 91024.

MORROW

West LA Morrow User's Group /The Morrow Minority. 40 dedicated members, with special emphasis in WP; PD library. No dues, but $1 at door to pay for refreshments. Some classes and informal newsletter. If new, call to reserve space: Dr. Bernice Ennis, (213) 276-9096, 1833 Franklin Canyon Dr., Beverly Hills, CA. Meetings 2nd Wednesday of the month.

LA Morrow User Group. Meets 3rd Thursday each month, North Hollywood Recreation Center, 11430 Chandler Blvd., North Hollywood. Contact Jack Byers, (818) 347-7283 for information.

NEC

Orange County NEC Users Group (OCNUG). Dedicated to NEC-APC computers, CP/M-86 & MS-DOS. Always room for any experience level. Meets 3 pm, third Saturday of the month. 6642 Lenore, Garden Grove. CA 92645. Call John Bingel at (714) 897-7656 for more info.

The Los Angeles Area NEC APC Users Group meets on the first Saturday of each month at 3 pm at the I/O Interface Computer Mart, 6241 West 89th St., Los Angeles, CA 90045. Telephone (213) 410-9824. There is no meeting in January, and occasionally a meeting may be cancelled or postponed, so it is best to call before coming.

OLIVETTI

Olivetti PC User Group forming. Send SASE to Stan Cory, 29500 Heathercliff Rd. #86, Malibu, CA 90265, or call (213) 457-3879.

OMNIS 3

Omnis 3 User Group. Meets every third Wednesday of the month at Grant St. Elementary School in the auditorium. Address is 2368 Pearl St., Santa Monica. Time is 7:30 pm. The use of Omnis 3 and Omnis 3+ in data processing information management systems is covered, from setup to advanced features. Expert and novice welcome. Call Zachary Sempers at (818) 701-1355 for information.

OSBORNE

TUG-NET Kaypro and Osborne SIG meets 4th Thursdays, 7 pm, Central Savings, 4464 Van Nuys Blvd., Sherman Oaks. Call (818) 882-1693 for information.

Osborne Komputer Owners Klub (OKOK) is a microcomputer user group serving a variety of computers: Osborne, Kaypro, Commodore C128, IBM and clones. Thus we serve both MS-DOS and CP/M operating systems. We offer monthly meetings, classes, public domain software library, electronic bulletin board and special purchase opportunities. Meetings first three Tuesdays of the month, 6–9 pm, at the Pasadena High School Library, 2925 E. Sierra Madre Blvd., Pasadena. Contact Lionel Soracco, (818) 794-3243, or write OKOK, P.O. Box 40429, Pasadena, CA 91104.

Osborne National Users Group meets 2nd Fri./mo. at 7:30 pm at Wizard of Oz, 20630 Lassen St., Chatsworth, CA 91311. Contact Art Schlefstein, (818) 709-6969.

PARADOX

Southern California Paradox Users Group. Anyone with an interest in the relational database Paradox please send an SASE to Brian Smith, 350 Palos Verdes Blvd., Redondo Beach, CA 90277. Meetings are being held in LA and Orange County.

RADIO SHACK TRS

South Bay Color Computer Club TRS-80, TDP-100, Dragon. Meets third Friday of the month at Mercury Savings, 22939 Hawthorne Blvd., Torrance. Info: Andrew Corlett, 1435 W. 172nd St., Gardena, CA 90247. (213) 538-8394.

OCTUG-Orange County TRS-80 Users Group. Meets the 3rd Sunday of each month at Hashinger Auditorium, Chapman College, on Center St. between Palm and Sycamore, Orange, CA, 12:30 pm. Devoted to the Tandy line of computers (TRS-80 Models 1,3,4 and the new Tandy 1000, 1200, 2000, 3000). We are slowly getting more people in the MS-DOS Special Interest Group. We welcome any and all new people. Contact Franco Collino, (714) 750-0887.

The California Computer Federation. Spearheaded by some of the best authorities on the TRS-80 color computer, the California Computer Federation promises to be a huge success. For additional information write to CCF Info, 366 W. Providencia, Burbank, CA 91305, or phone BBS #s (818) 886-6041 or (818) 787-0433. Meetings in Van Nuys area, fourth Tuesday of each month.

San Gabriel Valley TRS-80 Users Group. Supporting users of TRS-80 and Tandy computers. Meets 2nd Friday of each month at Arcadia Park Senior Citizens Center at 7:30 p.m. Monthly newsletter, various SIGs, lotsa fun & info. Contact Dan Dresselhaus. (818) 914-5831 days.

VTUG (Valley TRS-80 User Group). Devoted to users of TRS-80 Model I, II, 4, 4P, LNN or MAX-80. Speakers, presentations, raffle drawing, refreshments. No admission or membership fee, new members welcome. Meetings at Glendale Federal Savings, 71129 Topanga Canyon Blvd., Canoga Park, 3rd Tues., 7:30 pm. Contact Fred Blechman, (818) 346-7024.

VTHGValley TRS80 Hacker's Group. Programming and problem solving for Models 1, 3, and 4. No vendors, no machines. No dues. No sweat. Bring a blank disk and get NEW public domain software. Meetings 1st Fridays, 7:30 pm, Valley Plaza Park Auditorium, 12240 Archwood St., North Hollywood. Call Eric Bagai at (818) 982-0467 for more information.

Tandy 1000 (The MUG) Meets fourth Wednesdays, 7 pm, 9027 E. Artesia, Bellflower, CA. Contact Dick Sherwood, 4014 Centralia St., Lakewood, 90712, (213) 421-4014. The MUG RBBS (213) 425-0022, members only.

Color America. Radio Shack color Computer SIG meets 2:30-5 pm on the third Saturday of the month at Rosemead Community Center, 3936 N. Muscatel Ave., Rosemead. Contact Mark Randall, 2227 Canyon Rd., Arcadia, CA 91006, (818) 355-6111.

The Los Angeles-Wilshire Color Computer Users' Group, a TRS-80 Color Computer Users' Group, meets the 2nd Saturday of each month, 12:30 pm-5:30 pm in the Felipe de Neve library's community room, 2020 W. 6th, Los Angeles. Call Milton, (213) 558-4909.

SBT

The Orange County SBT Users Group is being formed and is seeking members who are interested in an atmosphere that promotes the better understanding and more efficient use of the SBT Accounting Software. Contact Jay Rubin, P.O. Box 5145, Newport Beach, CA 92662, (714) 720-8171.

SANYO

Sanyo-MS/DOS Table Top Computers, 14717 South Prairie Ave., Lawndale, CA 90260. (213) 679-1151.

Zenith-Sanyo Users Group meets 10 am every first and third Sunday at 401 S. La Brea Ave., Inglewood, CA 90301. Call Alan Gillen, (213) 674-0318 for information.

Sanyo Users Group of LA (SUGLA). Devoted to users of Sanyo MBC 550/555 micro business computer. Guests welcome. Dues $15/yr. Speakers, presentations, public domain software library, information, new hardware and software reviews. Meetings alternating 2nd Wednesdays and Thursdays, 7 pm, USC School of Medicine, Norris Medical Library, Conference Room Downstairs, 2025 Zonal Ave., LA. Contact Fred Blechman, (818) 346-7024.

TEXAS INSTRUMENTS

LA 99er Computer Club TI 99/4A support, classes and SIGs, large software library, monthly newsletter. Demonstrations, bulk purchase discounts on hardware, software and books. A good group to join. Meetings at Torrance Public Library, 3031 Torrance Blvd., Torrance, CA. 4th Wednesday of the month, 7 pm. Contact Terrie Masters, 148 S. Maple Drive, Beverly Hills, CA 90212, (213) 271-6930.

The TI-99 Club. Yes, there still are a lot of 99's and 99/4a's around. If you own one, then get in touch with these people. They have good info for TI owners. Meetings take place at the Westminster Community Center on the third Thursday of every month at 7:00 pm. For info, call (714) 842-0859.

TI-West (Los Angeles West Side Area). Meets at DeCoursey Engineering Laboratory, 11828 W. Jefferson Blvd., Culver City, on the 3rd Monday of each month. For information, contact Lew Howard at (213)397-9668.

San Gabriel Valley TI 99/4 Users Group meets 1st Wed./mo. at 6:30 pm in the Covina Parkway, West Covina, CA. Contact Tom Padilla, (213) 330-8240.

TI Riverside UG. Supporting the TI 99/4A. Meetings at Collett School, 3rd Thursday, 7 p.m. Contact Ed Butcher, 3523 McKinley St., Riverside, (714) 686-0336.

San Fernando Valley TI 99/4A User Group. Library, Workshops, Newsletter, How To? For further information call Ken Gilliland, (818) 507-6219, 6-9 pm, or Jim Berry, (805) 255-7583, 4-9 pm. Meetings 2nd Wednesday of the month, 7:30 pm, Doctor's Conference Room, Sherman Oaks Community Hospital, 4929 Van Nuys Blvd.

Antelope Valley TI UG. TI User Group. Meetings at Palmdale Culture Center, 3rd Wed., 7 pm. Contact Len Rouw, 38540 26th St. East, (805) 947-6270.

El Toro 99 Home Computer Users Group. The ET-99 Home Computer User Group meets to demonstrate programs, equipment, and discuss techniques. Contact Ken Baldwin, 23065 Sonoita, Mission Viejo, CA 92641, (714) 855-0480. Meetings at Mercury Savings and Loan, 1-5 and Lake Forest, El Toro, 2nd Saturday of each month 9 am - 12 noon.

Tri-Valley 99'ers. We have what you're looking for! Interesting guest speakers, software/hardware demonstrations, large group library, monthly newsletters. We serve the entire Conejo Valley and beyond! Contact Steve Mehr (805) 496-8725 or Chuck Salvatore, (805) 527-4129 for more information.

BUG (Brea 99er's Users Group). Meets the first Monday of the month at 7:30 pm at the Western Federal Savings meeting room, #10 La Habra Fashion Square, corner Beach and Imperial, in La Habra. For further information call Bob August at (714) 871-3405.

TIMEX-SINCLAIR

Timex-Sinclair. South Bay and West Side groups. Call John W. Petersen at (213) 545-9581 anytime or Dr. George Kuby (213) 201-2014 after 3 pm for more information.

TOMY

Tomy Tutor computer user group. Contact Eugene C. Dinovo, P.O. Box 37, Sepulveda, CA 91343.

VICTOR

West Los Angeles Victor Users Group (WLA-VUG). Victor 9000 users - you are not alone! Meet other users. Free V9000 software & purchasing discounts for members. Victor-specific bulletin board (818) 989-2216. Meetings at 8651 Olin St., LA 90034, 7 pm, 3rd Thursday, every month except December. Contact Roger Goodman, (213) 558-8363.

Orange County Victor 9000 User Group. Meets second Friday of the month at 7:30 pm, Cal State Long Beach, Palo Verde St., Engineering Bldg. #2, Room 304, Long Beach. For information write or call Don Henderson, 9350 Bolsa Ave. #8, Westminster, CA 92683, (714) 894-0073.

WANG

Wang WP Users Group. Meets 4th Thurs. of each odd month, 6 pm. Newsletter, speakers,information network. Call for meeting place: Steven Hirsh, (213) 255-5515, or write 2858 El Roble Drive., Los Angeles 90041.

WORDSTAR

WordStar User Group LA. Now forming. for all WordStar users, regardless of computer. Discussion, lectures, presentations, & demos, including enhancement products. Shortcuts & discount purchases. All experience levels. Call for info about first meeting: Ken Adler, (818) 501-4798, (818) 783-4533.

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X.C.E.L. (XScribe Court Reporters for Education and Learning). XScribe users can share knowledge, have sessions on resolving problems encountered, and keep abreast of activities in the C.A.T. field. Contact Diane Altshuler, XScribe Corp., 3366 N. Torrey Pines Ct. Suite 300, La Jolla, CA 92037. (800) 854-2919.

ZENITH

Zenith-Sanyo Users Group meets 10 am every first and third Sunday at 401 S. La Brea Ave., Inglewood, CA 90301. Call Alan Gillen, (213) 674-0318 for information.

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TANDY 1000, 640K, 2 floppies, clock, printer, CM-4 monitor, MS-DOS/Deskmate. $1,100. (213) 408-4814.

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We'll also review Zenith's hot new laptop, the Z-181. Stephan Wickham will report on Migent Software, a young company formed by Ashton-Tate alumni, now engaged in creating a radically new database management product.

See you next month!

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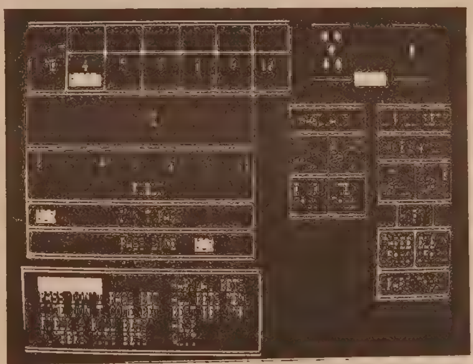

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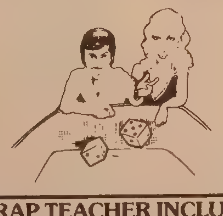

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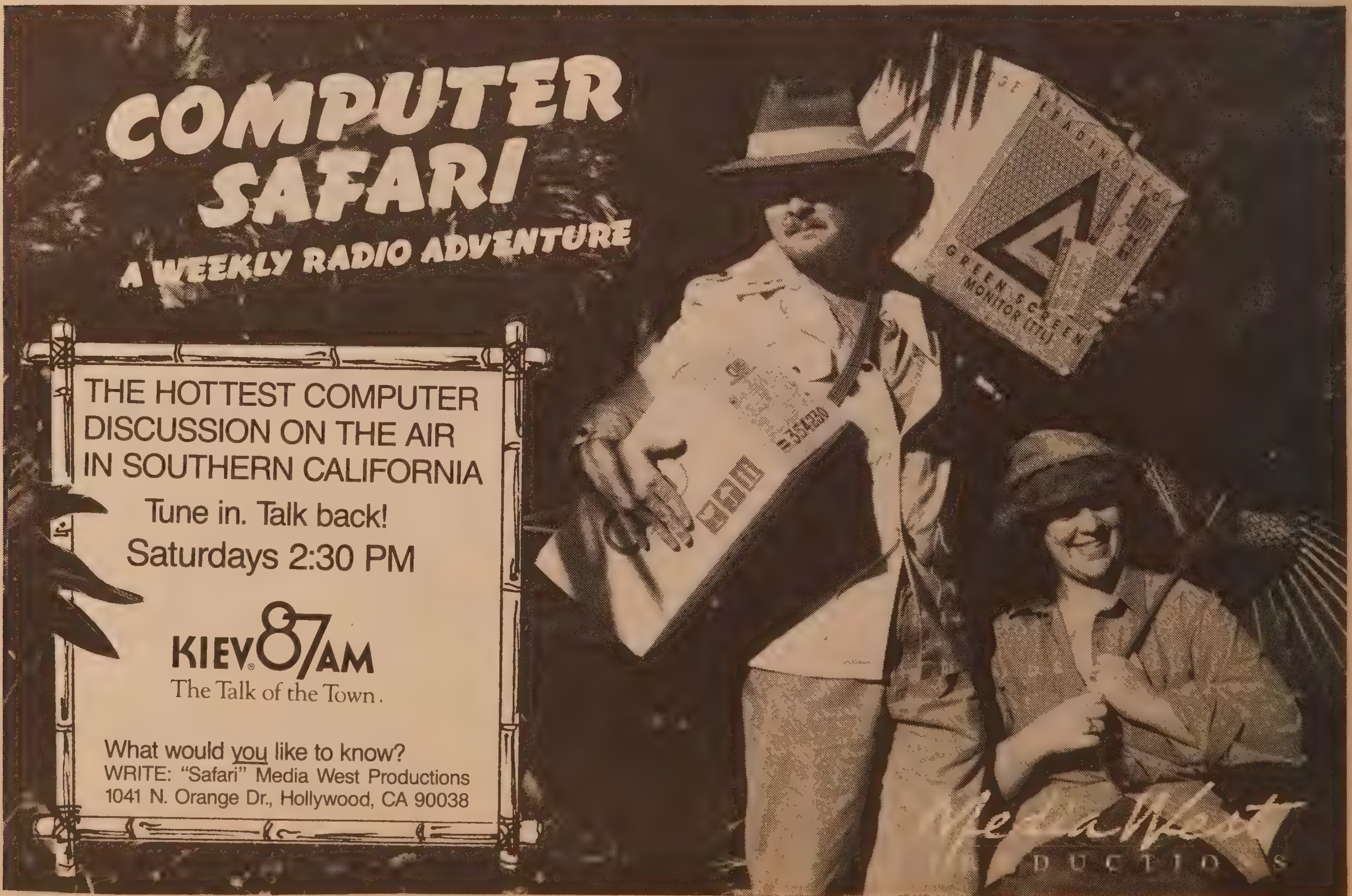

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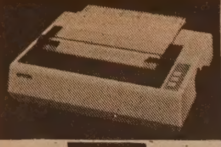

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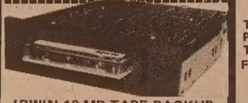

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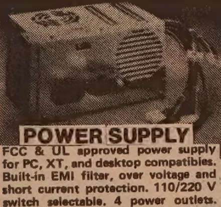

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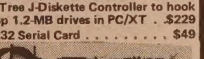

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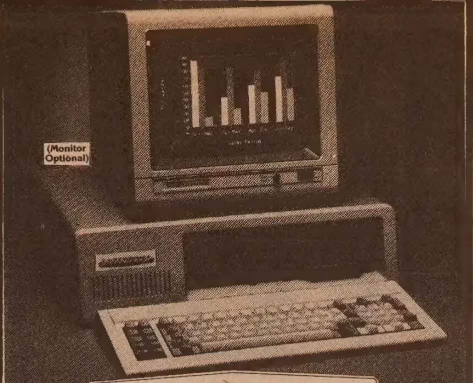

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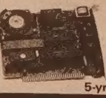

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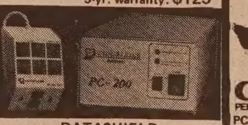

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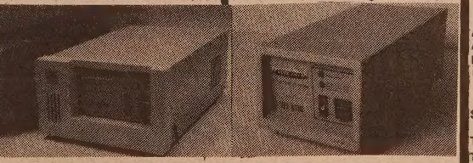

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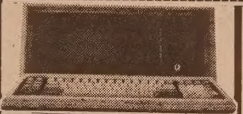

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D.O.S.	$65

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Taxan 635 RGB Monitor.	$449
Taxan 650 RGB Monitor.	$515
Taxan 760 EGA Monitor.	$525
Thompson 14" RGB Color monitor w/ green & amber switch.	$325

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Quimax DM-14G – 13" green TTL, 750x350 resolution, titlt & swivel base included. 1 yr. warranty	$155
Samsung SF39A7, 12" flat screen TTL Green monitor w/swivel base	$105
Taxan 115, 12" green composite	$125
Taxan 121, 12" green, 1000x360 dots, TTL monochrome	$145

★★★ AMBER SCREEN ★★★

Amdek 300A, 12" amber	$149
Amdek 310A, 12" amber	$169
Princeton MAX-12, 12" amber.	$169
Quimax DM-14A – 13" amber TTL, 750x350 resolution. Tilt & swivel base included. 1 yr warranty.	$159
Samsung SM12SFLAA7, 12" flat screen TTL Amber monitor w/base.	$109
Taxan 116. 12" amber composite	$129
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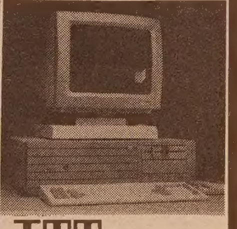

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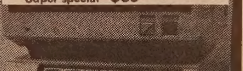

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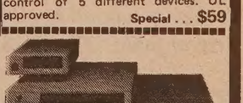

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A continuing fictional story

CUPERTINO

of the computer industry and the people within it.

By Steve Rosenthal

"That's not a bad lap for a sit-down engineer," Tina White shouted as Jan Fanning sprinted for the last half lap of his two-mile run. It was the first time Tina had seen Jay since their one date before COMDEX. Jay gave her a quick wave, then put his head down for a last push up the straightaway. Finishing his sprint at the midpoint of the far side, Jay dropped back to a slow walk, and Tina joined him as he came around the curve.

"I hear this is the third time this week you've been out here early, Jay. Did things go so well at COMDEX that you people don't have to work hard anymore?" Tina's manner was easy, but she wondered whether Jay was as interested as he had been earlier in the winter. He obviously had some free time, but hadn't given her a call.

"Oh, we're still working hard enough. But we've got a lot more meetings these days, and sometimes I need a chance to run out the tension."

"Problems in your little group there?"

"Oh, you know, nothing worse than usual..." Jay kicked at a clod of dirt, then walked for a moment in silence. "You know, though," he brightened, "in some ways it's better. And I guess we aren't working as hard, because we're knocking off Saturday at noon. You interested in dinner Saturday?"

"Sure, are you treating?"

"If it's someplace reasonable. We didn't do *that* well at COMDEX." They both laughed.

"Say I come by and pick you up about seven?"

"Right. I still have to get a mile in today, so see you then." Tina began her pre-run stretches, and Jay picked up his towel and headed across the strip of lawn to his Volkswagen.

The flashing yellow warning lights on the automated parts delivery carts were as close to morning sunlight as you were likely to see inside Ample Computer's main assembly buildings. As with most of the other computer firms that had kept some production here instead of sending it all overseas, the main floor of the increasingly-automated factory looked like one big windowless interlocked machine rather than the California-style brick and glass palaces that housed the engineering and executive departments.

Still, although no sunlight penetrated, it was obviously early in the day, and the first shift was still working at a good clip. It was that midmorning hour when most of the crew had finally shaken off the vestiges of sleep, but tiredness was still a ways away.

"Everyone making chips is so hot on the Japanese quota deal, but it looks like it's the pits for us," Ann Sprague was telling Tina as they assembled still another run of circuit boards.

"You mean because chips are going to cost more?"

"Yeah, but only here. Instead of driving up prices, it's going to drive assembly jobs right over to some other country, that's what it's going to do."

"Whaddya mean?"

"There's no quota on assembled boards, and the tax is a lot less, too. So what is a company like Ample going to do? Ample's not going to pay us to stuff two dollar chips when they could pay someone less money to put cheaper chips in boards somewhere else."

"But what happens to the finished boards?" Tina asked.

"They go into all sorts of things, or they bring them in for final assembly here. Nobody cares. When's the last time you looked inside your TV or one of those computers to see where the boards came from?"

"I don't. You mean that Intel and National and TI and AMD get saved, but we get the shaft?"

"That's the way it looks. I don't know much about this new unit they're just starting, but they must want something special out of us to be making it here."

They worked for a while in silence, pulling boards out of tubs, adding the irregularly-shaped parts the machines couldn't handle, and then sending the completed work out to the soldering station.

"You see the new screens on the next batch?" Ann asked suddenly. "They're flat—no display tubes at all."

"Hand mounting or machine?" Tina asked.

"Hand. It's light, though, and it snaps down in place. Maybe four screws in the corners."

"Is it a long run?"

"I don't know. The rumor is that the company's going all flat screen. Everyone else will eventually, but Ample wants to be first."

"No more CRTs?"

"If it all works out, they say at least not for us. Assembly 2 stays with tubes for a while. So will everybody else in the valley. But in five years, everyone will be on flat screens except those monsters they use in some of those big CAD systems. You ever see those lines?" She looked up at Tina, not really expecting a direct answer. "Lifts and hoists just for the tubes, and every couple of years one goes boom and anybody who isn't wearing their safety stuff gets cut up bad."

"Safety people probably rush over to tell them it serves them right." Tina didn't really object to the safety engineers, but it seemed most of them treated the matter of whether you wore safety glasses as a question of morality rather than a precautionary measure. It was hard enough to see all the small parts they had to line up without any added glass layers. Why couldn't they just make the machines safer and leave the people alone? she thought.

"About those screens," she turned to Ann again. "Japanese, Taiwan?"

"I heard Japanese," Ann said. "It's the kind of stuff they make well. Hey, didn't that guy Jay you dated that time, didn't his company make flat screens?"

"I think so. But he never talks much about work."

"Well, maybe he can get his screens in here. I've got nothing against the Japanese, but I'd rather keep those jobs here in the valley."

"I'll ask him, but he probably won't say anything." ☐

(to be continued next month)

Steve Rosenthal is a writer, editor and television producer who spent years preparing to write fiction by driving a cab, hitching coast to coast, falling in and out of love, and lately working in the computer industry.

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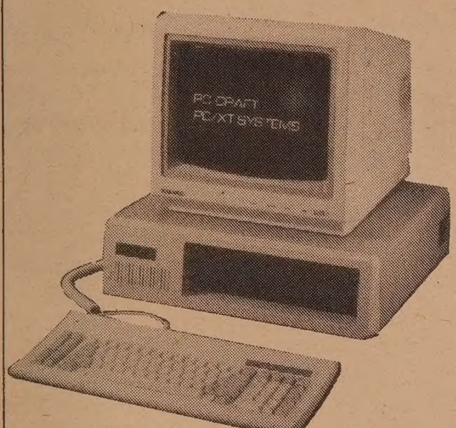

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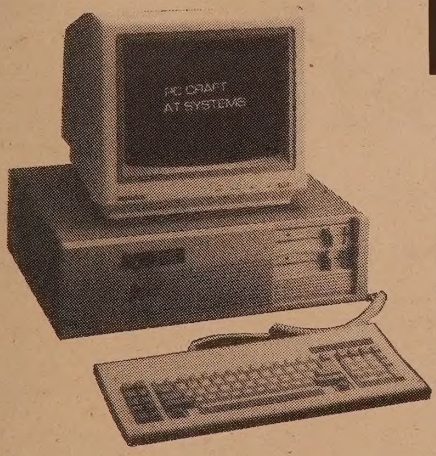

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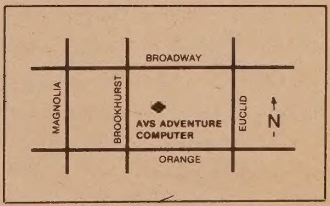

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